Job Search Behaviour, Unemployment, and Wage Gain in Canadian Labour Markets

Abrar Hasan Surendra Gera

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1 Introduction

For more than a decade now, economists and policymakers have wondered at the excessively high rates of unemployment and inflation coexisting in most western economies. Among the explanations offered for this so-called stagflation problem, the natural rate or nonaccelerating inflationary rate of unemployment (NAIRU) has received wide currency. The microfoundations of this aggregative analysis rest on the job search paradigm originating with the seminal articles of Stigler (1961, 1962).

According to the search paradigm, the labour market is beset with imperfections as regards information about jobs and workers. Participants in this market can reap economic benefits by improving the information that they possess. However, this information is costly to obtain, and this fact may require a jobseeker to leave a job he already has in order to devote his full attention to finding a new or better one. Under these conditions, the familiar economic calculus of equating the marginal cost of gathering information with its marginal benefits yields an optimum amount of investment in time spent on search. Far from being a waste of resources, unemployment, in this view, appears as a necessary and rational response to market imperfections. This type of unemployment may be described as "search-unemployment."

This view of unemployment is complemented by other recent theoretical developments, namely, the contract theory and the labour market turnover view generally. These theories tend to view unemployment as a voluntary phenomenon and, where involuntary, spells of unemployment are regarded as brief and as a necessary part of labour market dynamics. Market failure is rejected as an explanation, and unemployment is instead seen as arising from equilibrating mechanisms in the labour market. This view of unemployment has important policy implications. It tends to downgrade the importance of aggregate demand management policies and to substitute instead labour market policies that provide information or attempt to rationalize costs of search.

Given the importance of the policy issues involved, there is considerable debate about the validity and significance of the search theory in explaining unemployment. While recognizing that a certain amount of unemployment arising from frictions in the labour market is necessary for its smooth functioning, Tobin (1972) in particular has minimized its significance as a major factor in explaining the high rates of unemployment experienced over the past decade in the United States and other western economies. Gordon (1973), Feldstein (1975), and Clark and Summers (1979) also provide evidence that questions the empirical significance of search-unemployment. However, empirical tests of the hypotheses originating from search theory have been limited in general, and tests using Canadian data are practically nonexistent. This is all the more surprising since the issues are extremely relevant for economic policy. Both the expected returns and the cost of search are influenced by government policy. The unemployment insurance program, for instance, replaces a large fraction of the wages of unemployed jobseekers, especially those at the lower end of the wage spectrum. This heavy subsidization of search costs can induce individuals into unemployment as well as lengthen their duration of search. Both these factors contribute to a high rate of (frictional) unemployment. The question then arises whether such inducement to unemployment is socially desirable. How much society should invest in providing labour market information and the search for information, as opposed to providing more jobs, mobility grants, training, and so on, also becomes a relevant policy question.

In this study, we focus on determining the overall significance of the search phenomenon, rather than evaluating its performance relative to other manpower policies. From this perspective, the following four sets of questions are examined. How extensive is search activity? Are individuals flexible in their asking wage (commonly termed reservation wage) over the duration of search activity? What are the determinants of the duration of search-unemployment? And is search time productive?

The organization of the study is as follows. We paint first, in broad brush, the job search patterns observed in Canadian labour markets. This is done in Chapter 2. The objective of this exercise is to determine the overall significance of the jobseeking phenomenon. Data drawn from Statistics Canada's Labour Force Survey (LFS) are used for this purpose. The remaining three questions are tackled in the context of a generalized job search model described in Chapter 3. Implications are drawn from this model with respect to reservation wage, *RW*, productivity, and duration of job search. These implications are examined with the help of data from a Department of Industry, Trade and Commerce survey, which are described in Chapter 4.

With respect to *RW*, the chief hypotheses relate to its existence and flexibility over the duration of search. The flexibility of wage demands among unemployed workers over the duration of unemployment is a central issue of labour economics, and this is examined in Chapter 4. In the same chapter, we examine the impact of segmented markets on the behaviour of reservation wages. Chapter 5 is devoted to the central question of the productivity of the search process. Wage change between preunemployment and postunemployment periods is examined for selected subgroups of jobseekers, and its determinants are estimated within the search framework. A number of competing hypotheses are examined. Particular emphasis is placed on the contribution to total wage gain by an additional week of search. This chapter also considers the determinants of search duration. The hypotheses here are that an increase in search costs tends to shorten search duration, while a higher expectation of wage gains tends to lengthen it. Finally, Chapter 6 reports on the major conclusions of the study, which centre around two major issues, namely, the validity and significance of the search paradigm. Our major conclusion is that, while search theory does explain the behaviour of individuals in our sample, it does not provide the sole explanation of all unemployment. Under a plausible set of assumptions, about half of the measured unemployment rate can be explained by search theory.

2 Overview of Job Search Patterns

This chapter presents an analysis of the extent, composition, and patterns of job search activity in the Canadian labour market. The incidence of search is discussed in much greater detail in terms of frequency, duration, methods, and intensity of search. The resources devoted to search, namely, search costs, are also examined in Appendix B but, in view of severe data limitations, should be regarded as tentative.

The analysis is based on the annual average of monthly data from Statistics Canada's Labour Force Survey (LFS) for the year 1977. With the revisions implemented since 1975, the LFS provides information on whether an individual searched for a job (in the previous four weeks), regardless of his or her employment status. In this chapter, we are forced to adopt this definition of incidence of search. The data do not indicate the number of hours that are actually spent in searching. However, an indirect indication of the intensity of search can be obtained by looking at the number of search methods used. In the case of unemployed persons, the LFS also provides information on the reason for job separation.[1]

Three major themes emerge from the analysis of this chapter. First, job search activity is indeed an extensive and pervasive phenomenon. Second, the magnitude of search initiated voluntarily is very high. Finally, search behaviour among so-called secondary workers is significantly different from that for prime-age male workers. To the extent that these two groups can be identified with the secondary and the primary sectors, respectively, of the stylized dual labour market paradigm, our analysis suggests that search behaviour is strongly conditioned by the nature of the market sector in which the jobseeker is operating.

The Aggregate View

As seen in Figure 2-1, the total number of searchers, *S*, comes from two sources: the employed, *ES*, and the unemployed, *US*. We begin with an aggregative view, whose components are then examined in terms of *ES* and *US*. The latter category is disaggregated in terms of voluntarily and involuntarily initiated searches – quits and layoffs, respectively – as well as other flows into unemployment.

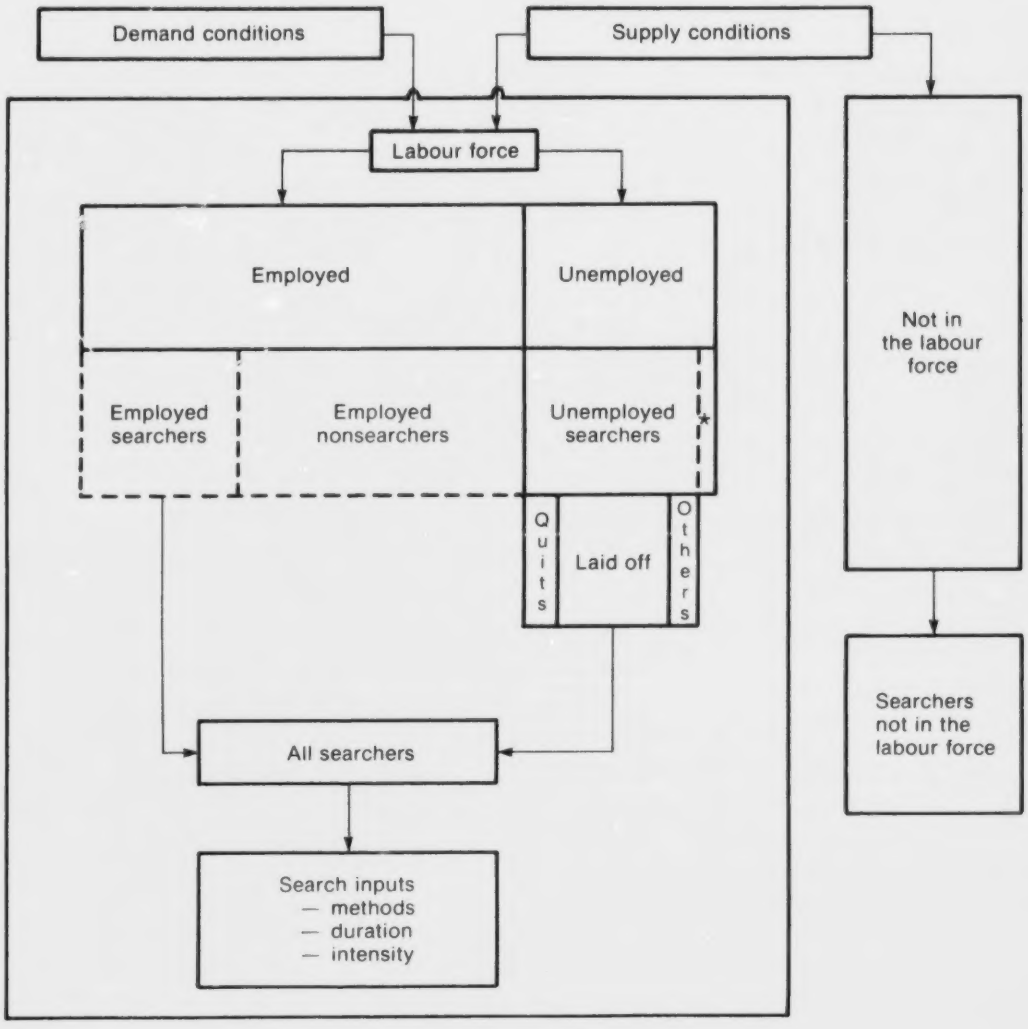
The data in Table 2-1 indicate that, on average in any one month, there were more than one million jobseekers in Canada during 1977, while the total labour force on average that year was 10,498,000. In other words, on average, one out of every 10 participants in the Canadian labour market was a jobseeker at any given time. This experience can be expressed succinctly by introducing the concept of the search rate, $\bar{s}$. This rate, obtained by expressing the number of jobseekers as a share of the labour force, was about 10 per cent in 1977. In comparison, under roughly similar economic conditions, the search rate for the U.S. economy amounted to 12 per cent, which suggests that Canadians may on average be less search-oriented.[2] This result is consistent with mobility studies that also document relatively lower mobility rates for Canadians.[3]

Although they are not as yet conclusive, the data for 1976-79 suggest that the long-run trend may be increasing. This possibility is supported by the speculation that the demand for information may be income-elastic. The price elasticity of demand for information may also be a contributing factor, as the communications industry is experiencing declining average costs in providing information.[4]

Not only is the aggregate search rate high, but also it is pervasive, as is apparent from data disaggregated by selected searcher characteristics (see Table 2-1). The rate is greater for females than for males, reflecting the differences in the distribution of job offers facing the two groups as well as the relatively lower search costs among females. Teen-agers exhibit the highest search rates, and the rate diminishes monotonically with age. Presumably the costs of job search are relatively lower for younger people, and these costs can be amortized over a longer work life. The search rate for married persons is lower than for others, perhaps a result of the age factor just

Figure 2-1

Schematic Presentation of Job Search Relative to Labour Force Variables



★ Unemployed nonsearchers

Table 2-1

Average Monthly Number of Jobseekers and Search Rate, by Selected Characteristics of the Labour Force, Canada, 1977

	Searchers (S)		Search rate $\frac{S}{\bar{s}}$
	Number	Share	
	(In thousands)	(Per cent)	
Total	1,047	100.0	10.0
Personal characteristics			
Sex			
Male	602	57.5	9.3
Female	445	42.5	11.1
Age			
15-19 years	261	24.9	22.3
20-24 years	268	25.6	16.2
25-44 years	368	35.2	7.8
45-64 years	141	13.5	5.1
65 years and over	8	0.8	4.4
Marital status			
Married	503	48.0	7.2
Others	543	51.9	15.6
Education			
Elementary	181	17.3	6.3
Secondary	714	68.2	13.4
Diploma	89	8.5	3.9
Degree	62	5.9	6.0
Job-market-related characteristics			
Industry			
Primary	57	5.8	7.6
Manufacturing	193	19.6	9.4
Construction	121	12.3	16.3
Transportation	61	6.2	7.0
Trade and finance	213	21.6	9.0
Public administration	340	34.5	9.3
Occupation			
Managerial and professional	123	14.2	5.5
Clerical-sales-service	436	50.5	10.1
Primary occupations	129	14.9	9.6
Fabrication	92	10.7	9.6
Construction	116	13.4	15.1
Transportation	91	10.5	10.9
Province			
Newfoundland	34	3.3	17.8
Prince Edward Island	..	..	..
Nova Scotia	42	4.0	12.8
New Brunswick	38	3.7	14.6
Quebec	320	30.7	11.6
Ontario	359	34.5	9.0
Manitoba	39	3.7	8.6
Saskatchewan	27	2.6	6.6
Alberta	63	6.1	6.9
British Columbia	120	11.5	10.5

SOURCE Based on Public Use Micro Data Tape, Labour Force Survey, Statistics Canada, Ottawa, 1977.

mentioned. By industry, the rate is lowest for workers in transportation and highest for those in construction. Occupationally, people in construction again have a high search rate, while it is lowest for workers in managerial and professional occupations. By province, search rates are relatively higher in provinces with looser labour markets, reflecting, in part, the greater incidence of unemployment there.

On-the-Job Search

The aggregate search rate described above comprises both employed and unemployed jobseekers. A disaggregation of the data reveals high rates of search among each. As shown in Table 2-2, some 270,000 individuals in 1977 reported that they were searching for a new job while they still had one, which amounted to 26 per cent of all jobseekers that year.[5]

Table 2-2

Average Monthly Number of Employed Searchers, Employed Search Rate, and Ratio to Unemployed Searchers, by Selected Characteristics of the Labour Force, Canada, 1977

	Employed searchers		Employed search rate ($\tilde{s}_e$)	Employed to unemployed searcher ratio
	Number	Share		
	(In thousands)		(Per cent)	
Total	270	100.0	2.8	0.35
Personal characteristics				
Sex				
Male	169	62.6	2.8	0.39
Female	101	37.4	2.8	0.29
Age				
15-19 years	66	24.4	6.9	0.34
20-24 years	74	27.4	5.0	0.38
25-44 years	102	37.8	2.3	0.38
45-64 years	22	8.2	0.8	0.18
65 years and over	6	2.2	3.4	..
Marital status				
Married	130	48.2	2.0	0.35
Others	140	51.9	4.5	0.35
Education				
Elementary	27	10.0	1.6	0.18
Secondary	182	67.4	3.2	0.34
Diploma	30	11.1	2.6	0.51
Degree	31	11.5	3.1	1.00
Job-market-related characteristics				
Industry				
Primary	16	5.9	2.3	0.39
Manufacturing	41	15.2	2.2	0.27
Construction	25	9.3	3.9	0.26
Transportation	18	6.7	2.2	0.42
Trade and finance	64	23.7	2.9	0.43
Public administration	105	38.9	3.1	0.45
Occupation				
Managerial and professional	48	17.9	2.2	0.64
Clerical-sales-service	126	46.7	3.1	0.41
Primary occupations	30	11.1	2.4	0.30
Fabrication	17	6.3	1.9	0.23
Construction	24	8.9	3.6	0.26
Transportation	25	9.3	3.3	0.38
Province				
Newfoundland	5	1.9	3.1	0.17
Prince Edward Island	..	..	..	..
Nova Scotia	10	3.7	3.4	0.31
New Brunswick	6	2.2	2.6	0.19
Quebec	56	20.7	2.2	0.21
Ontario	105	38.9	2.8	0.41
Manitoba	15	5.6	3.5	0.63
Saskatchewan	11	4.1	2.7	0.69
Alberta	30	11.1	3.5	0.91
British Columbia	32	11.9	3.0	0.36

Table 2-2 (concl'd.)

	Employed searchers		Employed search rate ($\bar{s}_e$)	Employed to unemployed searcher ratio
	Number	Share		
	(In thousands)		(Per cent)	
Job tenure				
1-6 months	150	55.8	..	..
7-12 months	29	10.7	..	..
1-5 years	68	25.2	..	..
6-10 years	15	5.6	..	..
11-20 years	5	1.9	..	..
20 years and over	2	0.7	..	..
Type of job				
Full-time	199	73.7	2.3	..
Part-time	71	26.3	6.4	..

SOURCE Based on Public Use Micro Data Tape, Labour Force Survey, Statistics Canada, Ottawa, 1977.

Despite its magnitude, on-the-job search has been ignored by economists as an element determining labour market outcomes. Yet, it affects labour market dynamics in a number of ways. First, it contributes to labour market flows; an employed individual may be led, as a result of job search, to a change in job, to full-time (unemployed) searching, or to a spell out of the labour force. Second, since on-the-job search is one determinant of ensuing job changes, it has some effect on wage movements and upward mobility in the labour market. Third, since an employed searcher competes for jobs being sought by unemployed individuals as well, this increases the job competition facing all unemployed workers. As a result, the postunemployment wage, the duration of unemployment, or both, can be affected by the job search activity of employed persons.

Some indication of the impact on labour market flows may be inferred from Table 2-3, which provides information on those employed jobseekers who changed or found jobs during 1977 within a two-month period of job search. On average, about one-third of on-the-job searchers reported that they changed or found jobs. Males were marginally more successful than females (33 per cent versus 28 per cent). The highest rate appears to be for male youths aged 15 to 19 years followed by females in this age category (41 and 35 per cent, respectively).

An indication of the impact of job search activity among employed searchers on wage outcomes may be gleaned from a study of the motivations of these jobseekers. Although such data are not available for Canada, the data obtained from a U.S. survey[6] are instructive, since, we suspect, Canadian jobseekers are unlikely to be very different from their U.S. counterparts in this respect. According to this survey, about one-third of the employed jobseekers surveyed wanted higher wages or salaries. Hence, a job change that occurs after an on-the-job search is likely to result in wage improvements. Furthermore, an additional one-third of jobseekers wanted better hours or working conditions, or better opportunities for promotion, and so on. In sum, two out of three of these jobseekers sought a different job because they were dissatisfied with their current job. It is noteworthy that, among other reasons cited, only 11 per cent stated that the current job was terminating or was temporary.

More direct evidence about the impact of on-the-job search on wages is obtained from the Labour Force Tracking Survey of the Department of Industry, Trade and Commerce, the major source of information for the analysis reported in Chapters 4 and 5. From the results to be described more fully in

Table 2-3

Distribution of Employed Male and Female Jobseekers Who Changed or Found Jobs as a Proportion of All Employed Searchers, by Age, Canada, 1977

	Employed jobseekers		
	Male	Female	Both sexes
	(Per cent)		
Age			
15-19 years	40.5	34.5	37.9
20-24 years	33.3	27.6	31.1
25-44 years	27.5	24.2	26.5
45-64 years	28.6	25.0	27.3
65 years and over	25.0	..	16.7
All ages	32.5	27.7	30.7

SOURCE Based on Public Use Micro Data Tape, Labour Force Survey, Statistics Canada, Ottawa, 1977.

Chapter 5, we note here that unemployed jobseekers who conduct on-the-job search prior to becoming unemployed are likely to register larger wage gains than individuals who do not begin their search while employed.

Turning now to the impact of on-the-job search on the search activity of unemployed workers, Table 2-2 reveals that, on average, for every three unemployed searchers, there is one employed person also looking for a job. Employed jobseekers provide more competition for some groups of unemployed than for others. To the extent that different age and sex classifications represent different sectors of the labour market, unemployed males face more competition from employed jobseekers than do females. Prime-age unemployed individuals experience greater competition relative to those in other age categories. Unemployed persons with diplomas or degrees also face greater than average competition. This observation reflects both the fewer career opportunities as well as the smaller risks of unemployment inherent in professional fields.

Table 2-4

Average Monthly Number and Proportion of Unemployed Persons Who Looked or Did Not Look for Work, Canada, 1977

	Unemployed persons	
	Number	Proportion of total
	(In thousands)	(Per cent)
Looked for work		
Without work	730	84.5
On layoff	13	1.5
Future starts	34	3.9
Total	777	90.1
Did not look for work		
On layoff	55	6.4
Future starts	30	3.5
Total	85	9.9
Total unemployed	862	100.0

SOURCE Based on Public Use Micro Data Tape, Labour Force Survey, Statistics Canada, Ottawa, 1977.

Table 2-2 also contains information on the employed search rate, $\overline{S}_e$, a rate obtained by dividing the number of employed jobseekers by the total number of employed persons. These data reveal a high degree of search activity in the aggregate as well as by various groups of employed searchers. Even in a province with extremely high rates of unemployment, such as Newfoundland, a significant proportion of employees is always searching to improve their economic lot. Job scarcity, it appears, does not lead to a stifling of job search. Clearly, on-the-job search is a search for a better job, rather than for any job.

Search by Unemployed Individuals

The average number of 777,000 unemployed jobseekers for the year 1977 represents about three-quarters of all jobseekers, which was 1,047,000 that year. As shown in Table 2-4, not all individuals counted as unemployed by Statistics Canada are identified as jobseekers, but approximately 90 per cent are.[7] The balance comprises individuals on layoff expecting to be recalled by their former employers and persons with a job to start within four weeks of the reference week (the future starts).

Selected characteristics of unemployed jobseekers are shown in Table 2-5, along with comparable data on the labour force. Since the vast majority of unemployed individuals are jobseekers, the characteristics of unemployed jobseekers parallel those of all unemployed persons. Some very familiar conclusions emerge from the comparison: females, relative to their proportion in the labour force, are significantly overrepresented (44 per cent versus 38 per cent); teen-agers and young adults aged 20 to 24 years are likewise overrepresented in the searcher category; about 88 per cent of searchers have secondary school education or less, a higher percentage than for the labour force; and managerial and clerical occupations have fewer searchers relative to the proportion of the labour force in this category (46 per cent versus 62 per cent).

The Jobleaving Phenomenon

A useful way of studying the data on unemployed jobseekers is to examine the contribution of various flows into this pool from among employed persons or from those not in the labour force. The former can be split into jobleavers and joblosers, while the latter are traditionally divided into (new) entrants and re-entrants (for definitions, see Appendix A). Data on these flows are provided for the period 1975-78 in Table 2-6 for Canada and the United States, along with the aggregate unemployment rate in the two economies. Although there are some differences in the U.S. and Canadian definitions,[8] they are not important enough to significantly affect the differences observable for the two countries.

Table 2-5

Average Monthly Number and Distribution of Unemployed Jobseekers, Compared with Total Labour Force Distribution, by Selected Characteristics of the Labour Force, Canada, 1977

	Unemployed jobseekers		Total labour force distribution
	Number	Distribution	
	(In thousands)		(Per cent)
Total	777	100.0	100.0
Sex			
Male	433	55.7	61.9
Female	344	44.3	38.1
Age			
15-19 years	195	25.1	11.1
20-24 years	194	25.0	15.8
25-44 years	266	34.2	45.0
45-64 years	119	15.3	26.4
65 years and over	2	..	1.7
Education			
Elementary	154	19.8	17.8
Secondary	532	68.5	60.8
Diploma	59	7.6	11.6
Degree	31	4.0	9.8
Industry			
Primary	41	5.3	7.2
Manufacturing	152	19.6	19.6
Construction	96	12.4	7.1
Transportation	43	5.5	8.3
Trade and finance	149	19.2	22.6
Public administration	235	30.2	34.8
Occupation			
Managerial and professional	48	6.2	21.2
Clerical-sales-service	310	39.9	41.1
Primary occupations	99	12.7	12.8
Fabrication	75	9.7	9.1
Construction	92	11.8	7.3
Transportation	66	8.5	8.0

SOURCE Based on Public Use Micro Data Tapes, Labour Force Survey, Statistics Canada, Ottawa, 1977.

Table 2-6

Comparison of Unemployment Rates and Distribution of Unemployment, Canada and the United States, 1975-78

	1975		1976		1977		1978	
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
				(Per cent)				
Unemployment rate	6.9	8.5	7.1	7.7	8.1	7.0	8.4	6.0
Unemployed persons								
Jobleavers	27.8	10.3	24.6	12.2	22.9	13.0	22.9	14.1
Joblosers	39.4	55.7	45.1	49.7	48.7	45.3	48.4	41.5
Entrants	5.8	10.3	5.6	12.1	5.6	13.7	5.8	14.3
Re-entrants	26.7	23.7	24.7	26.0	22.7	28.1	22.7	30.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE Based on Public Use Micro Data Tape, Labour Force Survey, Statistics Canada, Ottawa, 1977; and U.S., Department of Labor, *Employment and Earnings*, January 1977-79.

As can be seen from the table, depending upon the year concerned, voluntary jobleavers as a proportion of all unemployed persons are from one and one-half to two and one-half times as large in Canada as in the United States. During this period, the unemployment rates in the two economies were closest to each other in 1976. In that year, the proportion of voluntary leavers was twice as large for Canada as for the United States. This relationship does not alter, even when flows into unemployment are expressed as a proportion of unemployment minus new entrants.[9] The relatively higher jobleaving rate, then, is an important feature of the Canadian job market and should be considered in policymaking. The reasons for this high rate may be sought in the structure of the Canadian economy, its seasonality, and its institutional arrangements, such as the unemployment insurance provisions.

Table 2-6 also provides information on the re-entrant flow into unemployment. The large contribution of this source, 24 per cent on average, shows the importance of labour force transitions. This group begins job search by re-entering the labour force. Since this group has, by definition, some previous job experience, it can be disaggregated according to the reason for job separation. This would provide a more accurate measure of the total number of unemployment spells that originate voluntarily. Using this criterion, voluntary leaving turns out to be a larger proportion of unemployment (Table 2-7) than that obtained previously. Depending on the year, the broader definition adds about 15 to 17 percentage points to the narrower definition presented in Table 2-6. This happens because, compared with joblosers, a relatively larger proportion of persons who voluntarily quit exit from the labour force, and subsequently re-enter as unemployed jobseekers. The point to note is that the incidence of these labour force transitions is more pronounced in the case of voluntary leavers than for joblosers.

Table 2-7

Comparison of Average Monthly Number and Share of Voluntary Jobleavers with Total Unemployed, Canada, 1975-78

	1975	1976	1977	1978
Voluntary jobleavers†				
		(In thousands)		
Number	325	303	326	340
		(Per cent)		
As a share of unemployed	46.6	41.7	37.8	37.3
As a share of labour force	3.3	3.0	3.1	3.1
Total unemployed				
		(In thousands)		
Number	697	727	862	911
		(Per cent)		
Unemployment rate	6.9	7.1	8.1	8.4

†This definition includes all individuals whether they searched or not.
SOURCE Statistics Canada, *The Labour Force*, Statistics Canada, cat. no. 71-001, monthly, various issues.

About 76 per cent of voluntary leavers searched in 1977, a figure much lower than the 90 per cent observed for all unemployed persons. One possible explanation may be that the commitment to job search is weaker for jobleavers than for other unemployed persons, that is, part of the motivation for leaving a job may be noneconomic in nature. Moreover, some jobleavers may not engage in search if they already have a job lined up as a result of search activity during their period of employment.

The composition of voluntary leavers who engage in job search is shown in Table 2-8. About 56 per cent of voluntary leavers are females. In terms of age categories, youths and young adults make up about

Table 2-8

Average Monthly Number and Distribution of Voluntary Jobleavers Searching for Work, by Selected Characteristics of the Labour Force, 1977

	Voluntary jobleavers searching for work	
	Number	Distribution
	(In thousands)	(Per cent)
Total	247	100.0
Sex		
Male	109	44.1
Female	138	55.9
Age		
15-19 years	63	25.5
20-24 years	68	27.5
25-44 years	83	33.6
45-64 years	33	13.4
65 years and over	..	..
Marital status		
Married	116	45.1
Other	140	54.9
Province		
Newfoundland	6	2.4
Prince Edward Island	..	..
Nova Scotia	11	4.4
New Brunswick	8	3.2
Quebec	71	28.7
Ontario	90	36.4
Manitoba	9	3.6
Saskatchewan	7	2.8
Alberta	15	6.1
British Columbia	31	12.5

SOURCE Based on Public Use Micro Data Tape, Labour Force Survey, Statistics Canada, Ottawa, 1977.

50 per cent, which is proportional to their weight among unemployed searchers. Married voluntary leavers are less numerous than nonmarried ones. As in the case of all unemployed persons, about two-thirds of all jobleavers reside in Quebec and Ontario.

The Involuntary Flow into Unemployment

The largest flow into unemployment originates as a result of job loss. As indicated in Table 2-6, job loss is a key cyclical indicator and, depending upon the economic conditions in each year, contributes between 39 and 49 per cent of all flows into unemployment. Under comparable economic conditions, identified by the unemployment rate, the relative significance of job loss is somewhat lower in Canada than in the United States.

Not all the spells of unemployment that are involuntarily initiated lead to jobseeking, but more than 85 per cent do. The distribution of these searchers is shown in Table 2-9. These data become more relevant when examined together with comparable categories in Table 2-8. Two results are noteworthy. While females account for 56 per cent of voluntary leaving, their share among those laid off is much lower, at 34 per cent. Teen-agers aged 15 to 19 years similarly make up 26 per cent of jobleavers but only 20 per cent of joblosers.

Temporary Layoffs

One aspect of involuntary unemployment that requires special treatment concerns laid-off individuals who expect to be recalled by their former employers. As Feldstein (1975) points out, temporary layoffs are important for the theory of unemployment for two reasons. First, in terms of sheer proportions, temporary layoff accounts for about 50 per cent of all unemployment spells among persons classified as involuntarily unemployed. Second, based on the data from the U.S. Current Population Survey conducted in March 1974, according to Feldstein, only 10 per cent of laid-off workers search for alternative jobs, and, in manufacturing, about 75 per cent of laid-off workers return to their previous employers. The extent of job search among persons temporarily laid off being so low, he questions search theories that "equate unemployment with search and job change." Although the Canadian LFS data are not strictly comparable with the definition adopted by Feldstein, it is clear that temporary layoffs are a much smaller proportion of all unemployment than claimed by him.[10]. As shown in Table 2-4, persons laid off temporarily comprise only 8 per cent of the total number of unemployed. Other researchers also claim that Feldstein's figures for the U.S. economy are highly exaggerated.[11] This contention is borne out in Table 2-10, where the proportion of those laid off among all unemployed in the United States ranges from 12 to 21 per cent. The Canadian figures are roughly half of those for the United States in most cases.

Table 2-9

Average Monthly Number and Distribution of Involuntary Joblosers Searching for Work, by Selected Characteristics of the Labour Force, 1977

	Involuntary joblosers searching for work	
	Number	Distribution
	(In thousands)	(Per cent)
Total	398	100.0
Sex		
Male	262	65.8
Female	136	34.2
Age		
15-19 years	81	20.4
20-24 years	104	26.1
25-44 years	144	36.2
45-64 years	68	17.1
65 years and over	..	..
Education		
Elementary	89	24.7
Secondary	238	66.1
Diploma	23	6.4
Degree	10	2.8
Industry		
Primary	27	6.8
Manufacturing	91	22.9
Construction	72	18.1
Transportation	24	6.0
Trade and finance	74	18.6
Public administration	109	27.4
Occupation		
Management and professional	32	8.0
Clerical-sales-service	144	36.2
Primary occupations	66	16.6
Fabrication	48	12.1
Construction	68	17.1
Transportation	40	10.1
Province		
Newfoundland	18	4.5
Prince Edward Island	3	0.8
Nova Scotia	16	4.0
New Brunswick	19	4.8
Quebec	154	38.7
Ontario	118	29.7
Manitoba	10	2.5
Saskatchewan	7	1.8
Alberta	11	2.8
British Columbia	41	10.3

SOURCE Based on Public Use Micro Data Tape, Labour Force Survey, Statistics Canada, Ottawa, 1977.

Table 2-10

Comparison of Average Monthly Number and Share of Workers Laid Off with Total Unemployed, Canada and the United States, 1975-77

	1975		1976		1977	
	Canada	U.S.	Canada	U.S.	Canada	U.S.
Workers laid off						
			(In thousands)			
Number	88	1,662	67	1,040	67	853
			(Per cent)			
As a share of unemployed	12.75	21.20	9.22	14.27	7.88	12.44
As a share of labour force	0.88	1.79	0.66	1.10	0.64	0.88
Total unemployed						
			(In thousands)			
Number	690	7,838	727	7,288	862	6,856
			(Per cent)			
Unemployment rate	6.9	8.5	7.1	7.7	8.1	7.0

SOURCE Statistics Canada, *Historical Labour Force Statistics: Actual Data, Seasonal Factors, Seasonally Adjusted Data*, Statistics Canada cat. no. 71-201, 1978; and U.S., Bureau of Labor Statistics, *Employment and Earnings*, vol. 22 to 25, monthly, various issues.

This picture of the relative insignificance of the number of persons laid off in the Canadian economy is retained if we look at their industrial distribution. Table 2-11 shows that, as a proportion of the unemployed, they are consistently less numerous in Canada than in the United States.

We also find a higher degree of search activity among those temporarily laid off than Feldstein claims. As shown in Table 2-4, a total of 68,000 persons, on average, were on layoff during 1977. Of these, some 19 per cent, or 13,000, reported engaging in job search. In their analysis of the U.S. data, Bradshaw and Scholl (1976) report a still higher figure of 83 per cent.

The pervasiveness of job search activity is well illustrated in the case of temporary layoffs. Not only do persons temporarily laid off form a small proportion of joblosers, but also there is evidence that, even among these individuals, who are least likely to engage in search, one in every five engages in some search activity.

Duration of Unemployment

An important dimension of job search is the number of weeks spent on it. The duration of unemployment is the result of a complex set of forces, such as the state of the labour market and the cost and expected returns of search. An analysis of these

Table 2-11

Distribution of Layoffs, Unemployment, and Employment and Incidence of Layoffs, by Industry Group, Canada and the United States, 1977†

	Canada			United States			In Canada, layoffs as a share of:		In United States, layoffs as a share of:	
	Layoffs	Unemployment	Employment	Layoffs	Unemployment	Employment	Unemployment	Employment	Unemployment	Employment
					(Per cent)					
Primary	8.5	5.8	7.3	3.0	2.9	4.5	11.69	0.82	13.02	0.63
Manufacturing	28.9	20.1	19.6	41.6	21.1	22.8	11.46	1.04	24.52	1.72
Construction	21.0	13.0	6.6	18.4	8.5	6.1	12.89	2.25	26.97	2.85
Transport	7.9	5.9	8.5	5.5	3.5	6.4	10.68	0.65	19.86	0.81
Trade	10.1	15.9	17.4	14.3	21.1	20.7	5.05	0.42	8.46	0.65
Service	22.3	33.4	40.7	16.2	27.5	39.5	4.94	0.38	7.32	0.38

†Aside from rounding, distributions do not add up to 100 per cent because the classification is not exhaustive.
SOURCE Kaliski (1979)

issues is deferred to Chapter 5. Here, we limit ourselves to looking at the duration data as a factor reflecting the extent of search among searchers with certain characteristics.

Canadian data on the duration of search for employed searchers just do not exist. The U.S. data for 1973 relating to those employed jobseekers who eventually were unemployed suggests that some 50 per cent of these workers searched for less than two weeks, close to three-quarters searched for one month or less, and some 20 per cent searched for more than two months.[12]

As for unemployed searchers, the LFS has familiarized us with the concept of the average duration of unemployment. However, these data are based on in-progress spells of unemployment, and overstate the true average duration of completed spells.[13] Keeping this caveat in mind, the data on average duration of unemployment and its distribution by weeks of job search (Tables 2-12 and 2-13, respectively) provide some indication of the extensiveness of search. The average duration data (Table 2-12) seem to confirm a familiar theme of the turnover literature that demographic groups with high unemployment rates face low durations of unemployment. The duration of unemployment is shorter for women than for men (averaging 14.4 weeks versus 14.6 weeks) and is shorter for young persons than for those in other age groups (13.1 weeks versus 15.0 weeks for those aged 20 to 44 years, and 17.6 weeks for those aged 45 years and over).

These trends are also observed in Table 2-13. Young persons aged 15 to 19 years, for instance, have greater than average concentration in the 1-to-4 weeks category and are relatively less concentrated in the 27-weeks-or-more category. Differences in concentration between men and women, however, are somewhat marginal.

Clark and Summers (1979) point out that the shortness of the average spell of unemployment has been overemphasized. Their argument is based on the fact that the duration of measured unemployment does not correctly measure how long an individual is without a job. A fundamental flaw in the duration data lies in their failure to consider labour force transitions. Most spells of unemployment end not in employment but in labour force withdrawal. Many of the individuals counted as being out of the labour force are functionally indistinguishable from unemployed workers. Many re-entrants would almost certainly be better classified as joblosers and jobleavers completing long spells of unemployment, rather than as entrants starting a new spell of unemployment.

To look at some of these issues, let us consider the distribution of unemployed searchers by duration of joblessness (actual time without work including time not looking for work) presented in Table 2-14. It is clear that, contrary to the data on the duration of unemployment, females are more concentrated in longer periods of joblessness than are males. Moreover, many are without jobs for periods exceeding one year.

Methods of Job Search

An important dimension of jobseeking activity relates to the methods of search employed. Economists have traditionally distinguished between formal and informal channels of search.[14] The latter involves checking with friends or relatives and contacting

Table 2-12

Average Duration of Unemployment, by Sex, Age, and Marital Status, Canada, 1977

	Average duration of unemployment
	(In weeks)
Male	
Age	
15-24 years	13.0
25-44 years	15.1
45 years and over	18.1
Marital status	
Married	15.1
Single	13.9
Other	18.2
Average	14.6
Female	
Age	
15-24 years	13.3
25-44 years	14.8
45 years and over	17.0
Marital status	
Married	14.7
Single	13.3
Other	17.1
Average	14.4
Both sexes	
Age	
15-24 years	13.1
25-44 years	15.0
45 years and over	17.6
Marital status	
Married	14.9
Single	13.7
Other	17.5
Average	14.5

SOURCE Statistics Canada, *The Labour Force*, Statistics Canada cat no. 71-001, December 1977, p. 87.

Table 2-13

Distribution of Unemployed Persons According to Duration of Job Search, by Selected Characteristics of the Labour Force, 1977

	Unemployed persons searching for work			
	1-4 weeks	5-10 weeks	11-26 weeks	27 weeks and over
	(Per cent)			
Total	29.3	23.8	30.5	16.3
Sex				
Male	29.2	24.3	31.7	16.4
Female	30.7	23.4	29.8	16.7
Age				
15-19 years	35.9	25.6	27.2	11.2
20-24 years	30.8	25.4	31.2	16.1
25-44 years	27.5	23.4	31.4	17.8
45-64 years	21.9	20.9	34.5	22.7
65 years and over	..	..	..	..
Education				
None or elementary	25.0	21.8	33.2	20.0
Secondary	30.4	24.3	29.8	15.5
Diploma	30.8	23.9	29.2	16.1
Degree	30.6	26.4	29.4	13.7
Industry				
Primary	28.5	23.7	34.2	13.9
Manufacturing	25.3	22.9	33.3	18.5
Construction	28.1	25.5	31.9	14.6
Transportation	26.7	23.5	30.7	19.3
Trade and finance	29.0	23.6	30.9	16.6
Public administration	31.0	23.7	29.2	16.0
Occupation				
Managerial and professional	30.9	24.0	27.9	16.8
Clerical-sales-service	29.6	23.6	30.3	16.6
Primary occupations	27.8	22.8	33.1	16.3
Fabrication	25.6	22.1	34.1	16.1
Construction	28.6	25.1	31.9	14.8
Transportation	26.5	24.5	31.1	17.6
Province				
Newfoundland	23.5	21.7	31.7	22.4
Prince Edward Island	27.5	25.0	40.0	15.0
Nova Scotia	25.6	22.2	32.8	20.0
New Brunswick	22.8	21.6	35.0	21.9
Quebec	26.2	22.1	32.4	19.5
Ontario	30.2	25.5	29.5	14.9
Manitoba	35.4	27.5	28.8	8.8
Saskatchewan	40.6	25.6	26.3	9.4
Alberta	51.2	26.1	11.5	5.2
British Columbia	31.5	24.7	29.9	14.8

SOURCE Based on Public Use Micro Data Tapes, Labour Force Survey, Statistics Canada, Ottawa, 1977.

employers directly. Among the formal methods, the following are generally included: public employment service (PES); private employment agencies; looking at advertisements and placing or answering advertisements; union hiring halls; and other methods, such as the use of school or college placement bureaus, professional registers, and so on.

Tables 2-15 and 2-16 provide utilization rates for various methods of search by selected searcher characteristics for employed and unemployed individuals, respectively. For the employed, contacting employers is by far the method most frequently used; about two-thirds of searchers use this approach. Looking at ads is the next most common method, followed closely by the use of PES. This relative importance of methods holds, by and large, across the categories of age, sex, and other searcher characteristics noted in Table 2-15. Other generalizations emerging from Table 2-15 include the following.

Table 2-14

Distribution of Jobseekers According to Duration of Joblessness, by Sex, Canada, 1977

	Persons without work					
	Less than 1 month	1-3 months	4-6 months	7-12 months	13-24 months	2 years and over
	(Per cent)					
Male	5.9	35.5	26.2	20.8	8.1	3.6
Female	11.2	21.6	20.8	21.2	14.4	10.6

SOURCE Based on Public Use Micro Data Tapes, Labour Force Survey, Statistics Canada, Ottawa, 1977.

Regarding age, direct contact with employers diminishes with age; about 76 per cent of young jobseekers aged 15 to 19 years utilize this method, compared with 59 per cent of the group aged 45 to 64 years. On the other hand, looking at ads increases in significance with age. Prime-age workers aged 25 to 44 years use PES least, compared with other age groups.

As for education, the use of PES diminishes with the educational attainment of jobseekers, while looking at ads increases in significance with greater education. Less use of PES by highly qualified individuals may be a result of the lower penetration of the highly qualified manpower market by PES as well as being a cause of the lower penetration. Direct contact with employers also diminishes with educational attainment.

For the unemployed searcher as well (Table 2-16), contacting employers directly is the most commonly used method of search – two out of three jobseekers report using this approach. The second most frequently used method is PES, which is used by 60 per cent of jobseekers, while about 40 per cent of searchers report looking at ads. Three methods have relatively low utilization among unemployed searchers: placing or answering ads (15 per cent), checking with friends or relatives (13 per cent), and checking with unions (4 per cent). Only about 1 per cent use a job search method not listed above.

Both groups of searchers rely heavily on direct contacts with employers. The major difference between them is in the utilization of PES, which is used twice as frequently or more by unemployed searchers as by employed ones, perhaps because use of PES is mandatory for receiving unemployment insurance benefits. However, while the relative importance of methods remains the same across most of the searcher categories, there are some significant variations within the structure that may be noted.

With respect to age, teen-agers aged 15 to 19 years appear to rely more than other age groups on informal methods such as contacting employers directly. They exhibit relatively lower utilization of PES than others, especially those aged 20 to 24 years. As for sex, females make less use of PES than males.

The two latter observations suggest a more general point. From the structural point of view, unemployment is often viewed as a special problem of youths and females. Given that obtaining a first job may represent a tough hurdle for young labour market entrants and that PES services are free, one would expect youths and females to put more reliance on them. The contrary result suggests two possibilities: either youths and females are unaware of the facilities provided by PES, or the facilities are not seen as meeting their needs.[15] PES could improve its performance by actively seeking out teen-aged clients, perhaps through better linkages with school employment and counselling services, and by setting up programs directed specifically towards women.

Intensity of Job Search

In the absence of Canadian data on search intensity – the number of hours spent by jobseekers in looking for work each week[16] – we use a proxy measure, namely, the average number of methods used per searcher. We assume that the higher the average number of methods used, the more intensive the job search is likely to be. Clearly, the proxy is rather a poor one; some individuals may simply use one method very intensively, while others may use more methods, but only infrequently. Keeping this limitation in view, we find that employed jobseekers use an average of 1.55 methods (Table 2-15). Variations by age, sex, and other characteristics are marginal. Teen-agers and young adults use a marginally larger number of methods.

Table 2-16 presents data on the average number of methods used by unemployed searchers. Males and females use roughly the same average number of methods. A noteworthy feature is the strong positive correlation between years of education and the number of search methods used. Another point to note is the significant disparity in the average number of methods used by part-time and full-time workers, the former using fewer methods of search, on average. In terms of age, unemployed individuals over 25 years use fewer search methods than those under 25 years. As for occupations, managerial and professional workers use more search methods than other groups. Transportation workers utilize the least number of methods used, on average, followed by construction workers, probably reflecting the highly

Table 2-15

Utilization Rate of Search Methods Used by Employed Jobseekers, by Selected Characteristics of the Labour Force, Canada, 1977

	Contacted employers directly	Used public employment agency	Looked at ads	Used other methods†	Average number of methods used
			(Per cent)		
Total‡	65.2	29.3	36.7	24.1	1.55
Sex					
Male	65.7	29.6	34.3	25.4	1.55
Female	65.4	28.7	40.6	21.8	1.56
Age					
15-19 years	75.8	33.3	31.8	22.7	1.64
20-24 years	66.2	32.4	37.8	24.3	1.61
25-44 years	63.7	25.5	40.2	26.5	1.56
45-64 years	59.1	31.8	40.9	27.3	1.59
65 years and over	..	..	..	..	..
Education					
None or elementary	66.7	37.0	25.9	22.2	1.52
Secondary	66.5	31.3	36.3	24.2	1.58
Diploma	63.3	23.3	40.0	23.3	1.47
Degree	61.3	16.1	48.4	25.8	1.52
Industry					
Primary	68.8	37.5	31.3	25.0	1.63
Manufacturing	63.4	31.7	36.6	24.4	1.56
Construction	64.0	32.0	28.0	36.0	1.60
Transportation	66.7	27.8	38.9	22.2	1.56
Trade and finance	65.6	25.0	37.5	23.4	1.52
Public administration	66.7	27.6	39.1	20.9	1.54
Occupation					
Managerial and professional	64.6	18.8	39.6	22.9	1.46
Clerical-sales-service	64.3	29.4	40.5	23.0	1.57
Primary occupations	70.0	40.0	26.7	23.3	1.60
Fabrication	64.7	29.4	29.4	23.5	1.47
Construction	62.5	33.3	25.0	33.3	1.54
Transportation	72.0	32.0	36.0	24.0	1.64
Job tenure					
1-6 months	62.0	34.0	34.0	24.7	1.55
7-12 months	62.1	27.6	41.4	24.1	1.55
1-5 years	61.8	22.1	41.2	23.5	1.49
6-10 years	66.7	20.0	33.3	20.0	1.40
11-20 years	60.0	20.0	40.0	20.0	1.40
20 years and over	..	..	..	..	..
Changed or found a job					
Yes	69.9	31.3	28.9	25.3	1.55
No	63.6	28.3	40.1	23.0	1.55

†Other methods include use of private employment agencies, unions, friends or relatives, placed or answered ads, school placement offices, professional registers, and so on.
‡The sum of the methods does not equal the total because an individual may use more than one method.
SOURCE Based on Public Use Micro Data Tapes, Labour Force Survey, Statistics Canada, Ottawa, 1977.

specialized markets and the importance of union hiring halls for these occupational groups. This is in contrast to the greater average number of methods used by workers in the transportation and construction industry groups, which is influenced by the job search methods used by other occupational workers included within these industry aggregates.

The length of search and its intensity can affect each other in a number of ways. A more intensive search can reduce the duration of search by unemployed persons, other things being equal. On the other hand, a longer duration of unemployment can also induce a greater intensity of search; as an individual becomes desperate, he might search more

Table 2-16

Utilization Rate of Search Methods Used by Unemployed Jobseekers, by Selected Characteristics of the Labour Force, Canada, 1977

	Contacted employers directly	Used public employment agency	Looked at ads	Checked with private employment agency	Checked with union	Checked with friends or relatives	Placed or answered ads	Other methods†	Average number of methods used
					(Per cent)				
Total‡	68.7	60.2	39.7	5.1	4.1	12.7	14.5	0.9	..
Sex									
Male	68.8	63.9	36.4	4.9	6.8	13.4	13.2	1.2	2.08
Female	68.3	55.1	43.7	5.3	0.6	11.4	16.1	1.2	2.02
Age									
15-19 years	73.3	56.9	38.9	4.1	1.0	14.4	13.3	0.5	2.03
20-24 years	69.5	67.4	41.7	5.3	2.7	12.8	14.9	1.1	2.14
25 years and over	65.9	58.3	39.1	5.5	6.3	11.7	14.8	1.0	2.03
Education									
None or elementary	64.5	61.8	28.3	3.3	6.6	11.2	7.2	0.7	1.84
Secondary	69.3	60.2	42.1	4.9	3.2	12.8	15.4	0.2	2.09
Diploma	68.9	58.6	43.1	6.9	5.2	12.1	17.2	1.7	2.14
Degree	70.9	51.6	48.4	12.9	3.2	16.1	25.8	3.2	2.32
Industry									
Primary	..	..	..	..	..	..	..	..	..
Manufacturing	67.4	63.6	35.8	4.2	8.1	12.6	11.9	1.1	2.05
Construction	66.7	63.3	36.7	6.7	6.7	13.3	16.7	1.3	2.11
Transportation	62.5	62.5	50.0	12.5	2.5	12.5	25.0	1.3	2.29
Trade and finance	70.9	60.3	45.7	7.9	2.0	13.3	17.9	2.0	2.18
Public administration	68.5	58.6	40.5	5.2	1.3	11.6	15.5	1.3	2.03
Occupation									
Managerial and professional	73.5	58.8	44.1	11.8	2.9	14.7	29.4	2.9	2.38
Clerical-sales-service	74.4	51.3	41.0	5.1	2.6	12.8	17.9	2.6	2.08
Primary occupations	68.5	57.5	49.2	6.6	0.6	12.7	19.3	1.1	2.15
Fabrication	68.3	61.1	39.7	3.9	1.6	11.9	13.5	0.8	2.01
Construction	72.7	59.1	31.8	4.6	1.8	13.6	9.1	0.9	1.93
Transportation	33.3	66.7	10.0	..	3.3	10.0	6.7	..	1.33
Type of job sought									
Full-time	68.2	59.9	39.4	5.3	5.0	12.4	14.5	1.0	2.42
Part-time	69.6	52.0	41.6	4.0	1.6	12.8	15.2	1.6	1.98

†Other methods include use of school placement offices, professional registers, and so on.
‡The sum of the methods does not equal the total because an individual may use more than one method.
SOURCE Based on information provided by Labour Force Survey Division, Statistics Canada, Ottawa, 1977.

intensively. The contrary case is also possible: given the availability of social security benefits and the fruitlessness of searching when unemployment is high, some searchers may become discouraged and not search so intensively. An indication of how intensity varies with the duration of search is presented in Table 2-17. Search intensity appears to be at a maximum when individuals are unemployed for between five and 10 weeks and diminishes gradually thereafter, except when their unemployment lasts 40 weeks and over. Search is least intensive for individuals unemployed for between one and four weeks; a proportion of these individuals may not even begin their job search during this period, especially if they are expecting to be recalled by their former employers.

The average number of methods used by unemployed jobseekers in Canada during 1977 was 2.06, which is somewhat higher than the comparable U.S. figure of 1.58 for 1976 when the U.S. unemployment rate at 7.7 per cent was closer to the 1977 Canadian rate of unemployment at 8.1 per cent.[17] The higher Canadian figure is probably due to the larger

Table 2-17

Average Number of Search Methods Used by Unemployed Jobseekers, by Duration of Search, Canada, 1977

	Average number of methods used
Weeks looked for a job:	
1-4 weeks	1.93
5-10 weeks	2.17
11-26 weeks	2.12
27-39 weeks	2.03
40 weeks and over	2.05

SOURCE Based on information provided by the Labour Force Survey Division, Statistics Canada, Ottawa, 1977.

unemployment insurance coverage in Canada and the more universal requirement that all potential unemployment insurance beneficiaries register with public employment agencies.

How effective is job search by the unemployed? Which methods of search are most useful in landing a job? Unfortunately, the LFS does not have direct observations on these questions. For unemployed searchers, Table 2-18 presents, in descending order, a ranking of methods by success ratio, which measures in percentage terms how successful a method is in finding a job for a searcher (Gower, 1975). The corresponding ranking of methods according to their popularity among jobseekers is also indicated.

Table 2-18

Ranking of Success Ratios and Utilization Rates of Methods of Search Used by Unemployed Jobseekers, Canada, 1971

	Success ratio rank	Usage rank
Contacted employers directly	1	1
Checked with friends or relatives	2	3
Checked with union	3	5
Used public employment agency	4	2
Placed or answered ads	5	4
Used private employment agency	6	6

SOURCE Gower (1975).

Thus we note that, for public employment agencies, whereas they rank second in utilization, they rank only fourth in success in finding a job. In general, the rank correlation coefficient between the two series is low; Gower gives a coefficient of 0.26. He rationalizes the low coefficient, and especially the disturbing figures for PES, by noting that Canada/Quebec Manpower Centres do not hire employees, but merely refer them to prospective employers, which may lead respondents to identify job placement with employer visits rather than with PES. Gower's argument doubtless has some merit. We suspect, however, that it does not explain the whole problem; the discrepancy between the usage and success ratio ranks is so wide that inaccuracy in reporting alone is not a sufficient explanation. Given the low ranking for the success ratio for PES, its higher utilization rank may simply represent a waste of jobseekers' time. This result points out the need to improve the effectiveness of PES.

Summary

In this chapter, we identify the importance and extent of the job search phenomenon. As shown in Appendix B, search is a billion-dollar industry. One in 10 Canadian labour force participants is a jobseeker. This statistic, which we refer to as the search rate, suggests that job search is an extensive labour market activity. There is some tentative suggestion that the search rate is likely to have a long-run upward trend, which would suggest a growing demand for labour market information over time.

The pervasiveness of job search activity is indicated by a number of factors. First, no matter which socio-economic characteristic is examined, we find a significant amount of associated search activity, which can generally be explained by search theory; for example, younger searchers exhibit a higher commitment to search activity because they face lower search costs and because they can expect to have a longer work life over which to amortize these costs. Second, we find that the incidence of on-the-job search is high even in a province with an extremely high rate of unemployment, as in Newfoundland. Apparently, scarcity of jobs does not stifle job search activity. Clearly, the objective of on-the-job search is a better job rather than any job, which is a core concept of the search theory framework. Third, we attribute the high incidence of voluntary job separation among the unemployed to the readiness of workers to opt for full-time rather than part-time search activity, although, because of conceptual complexities involved, it is difficult to label the total duration of such unemployment as voluntary. Finally, as for unemployment spells that begin with involuntary job separations, even persons who are laid off and subject to recall by their former employers also exhibit a significant degree of search activity.

A major conclusion is that search duration is shorter for females and youths than for prime-age males, although the former experience higher unemployment rates. Turnover theorists argue that their

higher unemployment rates are due to the higher incidence of unemployment among females and youths and that these groups actually experience unemployment spells of shorter duration. It is claimed, therefore, that their high rates of unemployment are not a good indicator of the burden imposed by unemployment. However, the differences in duration that we have noted above are so marginal that the argument loses its validity. Moreover, data on the duration of joblessness suggest that women are, in fact, more concentrated in longer periods of joblessness than are men.

The LFS data on methods of job search reveal that a large percentage of searchers use the services of public employment agencies. However, previous work in Canada suggests that the effectiveness of these in landing a job is low. This disparity between the utilization and effectiveness of public employment services holds for the United States, but is much less pronounced than in Canada. Moreover, we find low utilization of PES by youths and females, despite their higher unemployment rates. In view of these disparities, there is a need for public employment agencies to improve their performance.

To ascertain the intensity of search, we employ a measure of the average number of methods used as a proxy and find that, in comparison with Americans, Canadians use a larger number of search methods; intensity of search appears to be a function of one's awareness of information channels.

3 Theoretical Framework

The neoclassical theory of consumption and production rarely discusses accumulation of information, which is a necessary part of any individual decision-making under conditions of uncertainty. Search theory attempts to fill this void and, in this perspective, forms an essential element of any economic model that deals with behaviour where outcomes are uncertain. Here we focus on the uncertainty that relates to the labour market, as it specifically confronts jobseekers. This uncertainty has its roots in the commonplace observation that workers with given (vectors of) skills face prospective employers who may value them differently; the existence of wage dispersion in the labour market for a given skill is the starting point of job search theory.[1]

In his seminal articles, Stigler (1961, 1962) points out that jobseekers face exploitable opportunities in the form of market wage dispersion for their skills. However, information about the precise nature of actual wage offers is not a free good, but must be obtained at a cost. The notion that search is costly but has a positive expected return is at the core of formal search models. They all highlight the productive nature of search unemployment, and identify the source of returns to job search by the existence of wage dispersion.[2]

The key question addressed by early search models relates to the optimal stopping time. In these nonsequential search models,[3] it is assumed that information does not depreciate over the duration of search and that a wealth-maximizing jobseeker conducts a search of predetermined length. Consequently, the optimal duration of search is given by the criterion of the equality of marginal returns to the marginal cost of search. The searcher then accepts the highest-paying job encountered during this search period.

The Standard Search Model

Further theoretical developments ensuing from the works of Mortensen (1970) and McCall (1970) have been categorized as sequential search models. In their view, nondepreciation of information neglects the stochastic nature of the search process. In these models, a jobseeker must accept or reject each offer as he finds it, and he is not allowed to accumulate job offers. To arrive at the optimizing decision rule, the standard (sequential) search models make a number of simplifying assumptions, the key ones being the following:

- The searcher knows the parameters of the wage distribution, $F(W)$, which is given exogenously and is stationary. The value of the wage rate associated with a particular job offer, however, is unknown.
- Search is conceptualized as a random process. Job offers arrive at an exogenously determined rate and are independent, random draws from the wage distribution.
- The intensity of search is fixed. The probability of generating a job offer is given and constant per unit of search period.
- The cost of search, C, per period is known to the searcher, is assumed to be constant over the unemployment duration, and consists of foregone earnings and the pecuniary out-of-pocket costs incidental to search.
- The jobseeker is assumed to be risk neutral.

Given these assumptions, income (or wealth) maximization is achieved by classifying all possible job offers into two mutually exclusive classes: acceptable and unacceptable. It has been shown[4] that the decision criterion separating the two classes of wage offers is characterized by a single critical number known as the reservation wage, RW, which has the property such that, for a wage offer, W_0,

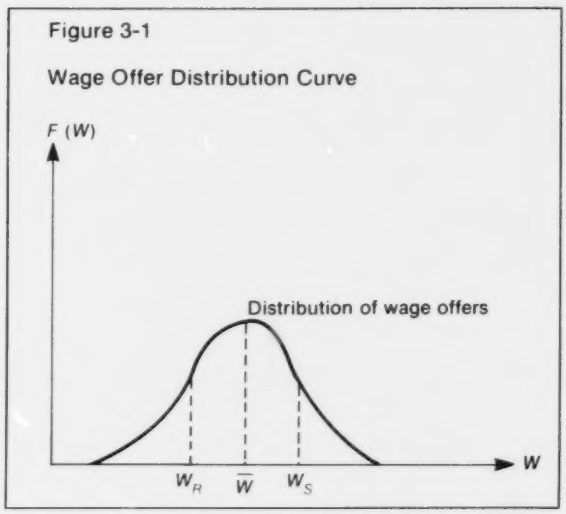
$$(3.1) \quad \begin{aligned} W_0 &\geq RW \text{ is accepted, and} \\ W_0 &< RW \text{ is rejected} \end{aligned}$$

In order to understand the implications of the search process just described, consider the behaviour of an individual who has a certain level of skills

and a distribution of possible wage offers associated with it, as shown in Figure 3-1. The individual sets his reservation wage at W_R. Assume further that the maximum wage that employers are willing to offer this person is W_S. The individual then can expect on average to receive a wage offer of $\bar{W}$, which is the conditional mean of the wage distribution between his maximum potential wage, W_S, and his reservation wage, W_R. In other words, $\bar{W}$ is the expected value of wage offers for which the jobseeker is eligible and which he is willing to accept.

Figure 3-1

Wage Offer Distribution Curve



Clearly the higher the *RW*, the higher the expected value of the wage offers, given that he finds a job. However, the higher the *RW*, the lower the individual's probability of finding an acceptable wage offer in each period (that is, the area under the curve lying between W_R and W_S in Figure 3-1), and hence the longer his expected duration of unemployment. The probability of finding an acceptable job offer can be expressed as:

$$(3.2) \quad P(W_0 \geq W_R) = \int_{W_R}^{W_S} F(W)dW$$

The expected duration of search, *E(D)*, is given by:

$$(3.3) \quad E(D) = 1/p \ (W_0 \geq W_R)$$

or

$$(3.4) \quad E(D) = 1/\int_{W_R}^{W_S} F(W)dW$$

The expected wage, *E(W)*, can be expressed as:

$$(3.5) \quad E(W) = \frac{\int_{W_R}^{W_S} W F(W)dW}{\int_{W_R}^{W_S} F(W)dW}$$

A wealth-maximizing individual would set *RW* such that the marginal cost of searching in another period is equal to the marginal expected returns from searching during that period. In this context, the jobseeker is thus assumed to rationally choose his expected duration of unemployment and expected postunemployment wage.

In the framework just described, consider now the impact of an increase in the cost of search, *C*. Given the fact that the wage offer distribution, and therefore the expected return from search, is unchanged, the W_R set by the individual would be reduced to maintain the equality of costs and returns at the margin. With a lower W_R than shown in Figure 3-1, the mean of the acceptable wage offers, *E(W)*, will also be lower than the $\bar{W}$ shown.

In contrast, consider now the situation in which the wage offer distribution shifts to the right in Figure 3-1, that is, each offer now has a higher wage value attached than previously, all else remaining unchanged. This change will result in a higher W_R and a higher W.

Since the early 1970s, there have appeared a number of models that attempt to extend the analysis of the standard search model by introducing greater generality and realism in the underlying assumptions. Mortensen (1970), for example, introduces discounting into an infinite time horizon model. Alchian (1970) and Gronau (1971) develop a finite time horizon model with discounting. Gronau (1971) and Mortensen (1970) introduce budget constraint and an alternative source of income. Salop (1973) replaces the assumption of random search by systematic search. In this systematic search process, jobseekers explore the most promising opportunities first in an optimal sequencing procedure. McCall (1970) considers an adaptive search model, in which a jobseeker does not know the distribution of wage offers. All these models are based on wealth-maximizing behaviour. Whipple (1973) diverges from the notion of income maximization as the searcher's goal, and concentrates on the utility maximization aspect of search based on life cycle behaviour. He explicitly

recognizes the utility associated with income from earnings, compared with the utility of welfare payments during the period of unemployment.

In spite of these advances, the basic implications of the standard search model for the expected duration of search-unemployment and for the reservation wage of the unemployed jobseeker, outlined earlier, remain intact and are invariant to the differences in the assumptions made. These implications may now be summarized as follows:

- Anything that reduces the cost of being unemployed will increase an individual's expected duration of unemployment and reservation wage.
- Anything that influences the distribution of potential wage offers facing an unemployed jobseeker will influence his expected duration of search and reservation wage. For example, changes in local labour market conditions will influence an individual's expected durations of unemployment and reservation wage.
- Anything that increases the individual's discount rate (that is, the subjective rate of time preference, in the sense of increasing his need for current income) will lead to a decrease in both his expected duration of search and his expected reservation wage.

Despite significant theoretical advances in modeling job search behaviour, there is limited empirical work to follow up on the theoretical advances, especially in Canada. Those areas receiving some attention from empirical researchers relate to the behaviour of reservation wages, duration of search, and postunemployment wages.

In regard to *RW*, most of the empirical evidence has supported the hypothesis that *RW* declines over the duration of search. The factors suggested for a declining reservation wage include a finite time horizon (Gronau, 1971), a fall in the marginal utility of leisure (Kasper, 1967), the depletion of assets and savings (Kasper, 1967), and a progression from more promising to less promising job possibilities (Salop, 1973). The independent effect of these factors has not been identified, however.

In regard to the determinants of duration of unemployment and postunemployment wage, Ehrenberg and Oaxaca (1976), Felder (1975), Schmidt (1974), and Stephenson (1976) attempt to estimate a duration of unemployment and/or a postunemployment wage equation derived from the job search hypothesis. Ehrenberg and Oaxaca (1976) focus on the effect of unemployment insurance on the duration of unemployment and on the postunemployment wage. Felder derives his empirical specification for the duration of unemployment and for postunemployment wages from a two-period utility-maximizing model of individual job search behaviour. Stephenson identifies four endogenous variables, including the duration of unemployment, and proposes a simultaneous estimation of the four linear equations. His results regarding unemployment duration are generally inconclusive. Schmidt develops a model of the individual job search process, based on two sequential periods of search-unemployment. From the wealth-maximizing behaviour of the jobseeker, he posits a linear equation for the duration of unemployment. Schmidt also examines the issue of productivity of search time. He finds that search time is productive in the sense of higher wage gains per week of unemployment. Most of these studies, it should be noted, focus upon the impact of unemployment insurance benefit rates on the duration of search.

In the following two chapters, we provide empirical evidence on several issues drawn from the job search models reviewed above. The questions that we tackle are:

- Does the reservation wage decline over the duration of search?
- Is the duration of search by unemployed persons determined by the variables examined in search theory?
- Is search time productive?

Our intention is not to contribute to the existing theoretical literature on job search, and we do not present a new model of job search. Instead, we concentrate on providing empirical estimates regarding the hypotheses drawn from a generalized search model.

4 Behaviour of Reservation Wages

This chapter reports on our investigation of the wage-setting behaviour of individuals – or how workers frame their wage demands when unemployed. In the language of search theory, this translates into the question of whether unemployed individuals behave as if they employ a reservation wage, or *RW*, strategy, which involves equating the marginal cost and the returns of extra search. A second issue considered relates to the flexibility of *RW* over the period of unemployment. Rigidity in wage demands has been recognized since the days of classical economists as a major factor causing unemployment. An inflexible *RW* implies that jobseekers do not see fit to moderate their wage demands as their duration of unemployment increases. In recent years, social assistance programs have been criticized for their contribution to this inflexibility.[1]

To our knowledge, these two issues have not been examined in the literature on Canadian labour markets. Furthermore, empirical work available for other countries contains a number of problems. A major problem is that most of this work is not rooted in search theory methodology.[2] In addition, data limitations have prevented most of the empirical work from considering the effect of a number of key labour market variables that are known to be important determinants of wage flexibility. For example, an important school of economics emphasizes segmentation as a key determinant of labour market behaviour. The "new unemployment" literature points out that, for major groups of unemployed individuals, the jobs available are neither appealing in themselves nor rewarding as pathways to better jobs in the future.[3] Hence, the behaviour of *RW* for individuals in the secondary labour markets could be different from that for individuals who form part of what is described as the primary labour market.[4] However, this issue is not addressed by empirical studies on job search.

Empirical Specification

Standard search theory models suggest that the reservation wage, *RW*, in the functional form can be specified as:

$$(4.1) \quad RW = f_1 (R, C)$$

where

R = expected returns from search, and
C = the costs of search.

The underlying search theory hypothesis is that R is positively related to *RW* while C is negatively related. In turn, the expected returns from search depend upon the mean and the standard deviation of the distribution of possible wage offers, *F(W)*, facing the individual.

Unfortunately, equation 4.1 cannot be estimated directly because *RW* is not itself observable.[5] However, the wage offer, W_t, actually accepted in period t is known. Since the restriction $W \geq RW$ is placed on W_t, then, in principle, it should be possible to approximate *RW*. To pursue this approach, we assume that the wage offer actually accepted by individual i in period t is a proxy for his reservation wage in period t. The wage offer distribution, *F(W)*, can be captured by a vector, X_j, denoting the searcher's productivity characteristics and the labour market conditions. The *RW* function then can be given as:

$$(4.2) \quad W_i (t) = X_j + X_j^c + \epsilon_{it}$$

where

W_{it} = the wage offer accepted by individual i in time t, and
X_j^c = a vector of the cost of search variables.

We now proceed one step further and inquire whether individuals increase, reduce, or maintain their reservation wages over the duration of search. Each of these three options is theoretically feasible under different sets of assumptions. For example, an individual discovering that the wage offer distribution has a higher mean than expected will tend to revise his *RW* upward (Sant, 1977). On the other hand, *RW* would be constant under the assumptions of a/ an

infinite time horizon, b/ knowledge of the wage offer distribution, and c/ lack of capital constraints. The third possibility, that of declining reservation wages, arises, if it is assumed that the searcher has a finite time horizon. Thus, the behaviour of *RW* over the duration of search is an empirical issue.

To examine this issue, we introduce in equation 4.2 the variable duration of search, *D*, as a catchall term to capture the effect of search duration. This equation now becomes:

$$(4.3) \quad W_i(t) = X_i + X_i^c + g \cdot D + \epsilon_{it}$$

From the foregoing discussion, we can now derive equations that are suitable for estimation. These equations may be written as:

Constant Reservation Wage Function

$$(4.4) \quad \log W_t = \sum_p b_p X_p^j + \sum_q b_q X_q^c + e^R$$

Flexible Reservation Wage Function

$$(4.5) \quad \log W_t = \sum_p b_p X_p^j + \sum_q b_q X_q^c + g \cdot D + e^R$$

where

$\log W_t$ = the logarithm of real (1971 dollars) weekly wages in period t,

X^j = variables determining the wage offer distribution only,

X^c = variables determining the cost of the search,

D_t = the duration of search,

b = coefficients, and

e^R = a disturbance term.

Equations 4.4 and 4.5 estimate the constant and flexible reservation wage models, respectively. The log of real weekly wages in period *t* is used as the dependent variable. The subsets identified by *Xi* include all the variables determining the wage offer distribution, but exclude *Xc*, that is, the variables that affect search costs. According to equation 4.4, an unemployed jobseeker will adjust upward his reservation wage, *RW*, if his expected wage offer rises or if search costs fall.

Before we describe the empirical proxies developed to capture these two sets of factors, it would be useful to describe the data available to us. The Labour Force Tracking Survey, 1978, conducted by the Department of Industry, Trade and Commerce, covers individuals from selected communities who were laid off or who voluntarily left their jobs as a result of a plant shutdown or a cutback in production. In compiling this survey, teams gathered a list of such individuals from specific employers within designated localities, and attempted to contact each individual on the list. From the individuals contacted, they sought information concerning the labour force experience of each individual for the five years from 1973 to the cutoff date in summer 1978. These data relate to all completed unemployment episodes, single or multiple, as the case may be. Each episode contains information on preunemployment and postunemployment wages, reason for job separation, selected personal and human capital characteristics, motivational and financial attributes of the individual, and some characteristics of the household to which he or she belongs.

The definitions and the mean values of the variables are given in Tables 4-1 and 4-2, respectively. When the data for all years in the 1973-78 period are pooled together, the total sample consists of 12,302 observations, of which 1,962 are for male quits, 870 for female quits, 7,821 for male layoffs, and 1,649 for female layoffs.

Our sample consists of individuals selected from communities experiencing employment difficulties in 1978. For this reason, it is not representative of the Canadian labour force or even of the unemployed population. This limitation is mitigated somewhat by including the five-year labour force history of each individual contacted, inasmuch as the communities in which these individuals were located in 1978 may have experienced normal economic circumstances in other years. A second limitation of the sample is the potential effect of the contact rate. Highly mobile individuals, especially those who moved out of the communities surveyed, could not be contacted and, as such, they may be underrepresented in the sample.

Consider now the proxies for the expected wage offer. The wage offer distribution facing an individual may be said to depend on the human capital or market productivity characteristics of the individual and on labour market conditions and characteristics. From the data available to us, we can develop empirical counterparts to these two sets of factors. An individual's market productivity characteristics

Table 4-1

Mean and Standard Deviation of Variables Used in the Wage Change Model for Jobseekers Who Quit or Were Laid Off Their Previous Job, by Sex, Canada, 1973-78

Variable	Quit		Laid off	
	Male	Female	Male	Female
AGE (years)	28.40	28.70	32.63	30.68
	(11.34)	(10.54)	(12.57)	(11.66)
EDUC (years)	9.40	9.65	9.37	9.86
	(2.67)	(2.40)	(6.75)	(6.43)
TRAINING (years)	0.67	0.25	0.73	0.56
	(1.32)	(0.66)	(3.95)	(5.71)
DUREMP (weeks)	115.71	115.53	172.56	159.60
	(260.45)	(173.10)	(310.22)	(272.89)
OCCUP	0.23	0.36	0.10	0.27
	(0.42)	(0.48)	(0.30)	(0.44)
UNIONIZE	0.53	0.52	0.71	0.58
	(0.50)	(0.50)	(0.45)	(0.49)
FLXINDUS	0.62	0.48	0.66	0.62
	(0.49)	(0.50)	(0.47)	(0.49)
FLXOCCUP	0.59	0.45	0.61	0.58
	(0.49)	(0.50)	(0.49)	(0.49)
FLXWAGE	0.43	0.39	0.48	0.48
	(0.50)	(0.49)	(0.50)	(0.50)
LOOKBLLJ	0.33	0.26	0.31	0.27
	(0.47)	(0.44)	(0.46)	(0.45)
SPOUSEY	0.13	0.47	0.18	0.47
	(0.34)	(0.50)	(0.38)	(0.50)
OTHERY	0.07	0.08	0.05	0.07
	(0.26)	(0.27)	(0.21)	(0.26)
SAVINGS	0.77	0.70	0.72	0.70
	(0.42)	(0.46)	(0.45)	(0.46)
UIB	0.70	0.71	0.90	0.85
	(0.46)	(0.45)	(0.29)	(0.35)
URATE	7.99	7.18	8.61	7.97
	(1.95)	(1.91)	(2.06)	(1.93)
LOCPRE1	0.03	.001	0.05	.005
	(0.16)	(0.03)	(0.21)	(0.07)
LOCPRE2	0.03	0.04	0.06	0.10
	(0.16)	(0.20)	(0.24)	(0.30)
LOCPRE3	0.70	0.57	0.63	0.50
	(0.46)	(0.50)	(0.48)	(0.50)
LOCPRE4	0.15	0.34	0.11	0.32
	(0.36)	(0.47)	(0.31)	(0.47)
LOCPRE5	0.03	0.02	0.02	0.02
	(0.17)	(0.13)	(0.15)	(0.15)
T (weeks)	40.38	47.29	36.62	43.41
	(43.45)	(47.91)	(39.10)	(40.63)
PRIMEARN	0.78	0.33	0.80	(0.32)
	(0.42)	(0.47)	(0.40)	(0.47)
DEPENDNT	0.57	1.12	0.69	1.05
	(1.10)	(1.51)	(1.74)	(3.71)
MARITAL	0.46	0.53	0.63	0.54
	(0.50)	(0.50)	(0.48)	(0.50)
W_{t-1} ($ 1971)	131.77	92.92	144.04	92.64
	(54.96)	(30.57)	(62.43)	(36.09)
D (weeks)	20.62	31.12	23.64	31.38
	(25.76)	(37.31)	(20.29)	(29.90)

SOURCE See text.

may be captured by such variables as *EDUC*, *TRAINING*, and *AGE*. *EDUC* is likely to be positively associated with expected wage offers, as are *TRAINING* and *AGE*. There may be some nonlinearities in *AGE*, which are captured in the model by introducing *AGESQRE*. Similarly, since age and education may be

Table 4-2

Definitions of Variables Included in the Data Set

Variable	Definition
W_t	the real (in 1971 dollars) weekly postunemployment wage (when a job is accepted) in period t
W_{t-1}	the real (in 1971 dollars) weekly preunemployment wage
AGE	actual age in years
AGESQRE	actual age in years squared
EDUC	years of schooling
AGEDUC	interaction variable, *AGE* × *EDUC*
TRAINING	years of formal training
DUREMP	length of the last job (prior to the unemployment episode) in weeks
OCCUP	1 if a white collar occupation, 0 otherwise
INDUSTRY	a set of five dummy variables representing different industries (the last category "others" is omitted from regressions): *INDUS*1 = manufacturing *INDUS*2 = construction *INDUS*3 = transportation and *INDUS*4 = trade and finance
UNIONIZE	1 if union member, 0 otherwise
FLXWAGE	1 if willing to accept wages lower than at the previous job, 0 otherwise
FLXMOVE	1 if willing to move to a new location, 0 otherwise
FLXINDUS	1 if also searched for a job in industries in addition to the industry of previous attachment, 0 otherwise
FLXOCCUP	1 if also searched for a job in ocupations in addition to previous occupation, 0 otherwise
LOOKBLLJ	1 if looked for an alternative job while still employed, 0 otherwise
URATE	provincial unemployment rate at the start of the search period
LOCATION	a set of six provincial dummy variables (British Columbia is omitted from regressions): *LOCPRE*1 = Newfoundland *LOCPRE*2 = New Brunswick *LOCPRE*3 = Quebec *LOCPRE*4 = Ontario *LOCPRE*5 = Manitoba
T	the actual tenure at the next job
SPOUSEY	1 if spouse had an employment income, 0 otherwise
OTHERY	1 if had other sources of income during unemployment, 0 otherwise
SAVINGS	1 if used savings during unemployment, 0 otherwise
UIB	1 if received unemployment compensation while unemployed, 0 otherwise
QL	1 if quit, 0 if laid off
D × *QL*	interaction variable (duration of search × quit or layoff)
PRIMEARN	1 if prime earner of the family, 0 otherwise
DEPENDNT	number of dependents divided by the number of earners in the family
MARITAL	1 if married, 0 otherwise
FLXPART	1 if worked part-time during the period looking for a job, 0 otherwise
DURUNEMP	duration of unemployment in weeks (by each unemployment episode)
NLOOKED	weeks not looked for a job while unemployed
D_t	duration of the job search in weeks (*DURUNEMP*, total weeks of unemployment, minus *NLOOKED*, weeks not looked for a job)

SOURCE See text.

correlated, we introduce the term *AGEDUC* (*AGE* x *EDUC*). Several other variables are added to capture an individual jobseeker's productivity characteristics. Job tenure with the previous employer, *DUREMP*, is used as a measure of work experience. It is hypothesized that longer tenure will improve the value of expected wage offers. One indicator of a person's labour market productivity is his past wages, W_{t-1}, which are likely to be positively correlated with expected wage offers.

The labour market indicators are identified by a set of dummy variables, *LOCPRE*1 to *LOCPRE*5 for various regions, and by the unemployment rate, *URATE*. We assume that, on balance, a tight labour market would imply higher wage offers relative to conditions in other markets. Hence, the impact on expected wage offers would be positive.

The variables *OCCUP* and *UNIONIZE* can serve both as labour market indicators, in the sense that

mean wage values differ by occupation and union, and as indicators of the productivity characteristics of an individual. By the same token, searching over different industries, *FLXINDUS*, or over different occupations, *FLXOCCUP*, is an element in determining expected wage offers. By broadening the market being searched, *FLXINDUS* is likely to be positively associated with expected wage offers. *FLXOCCUP*, on the other hand, may exert a negative effect, since transfers of human capital from one occupation to another may be costly.

Finally, three variables are introduced as controls. Whether an individual is willing to accept a pay cut, *FLXWAGE*, may act as a signal to employers and, for this reason, should have a negative impact on expected wage offers. On-the-job search, *LOOKBLLJ*, is another variable of interest and one that has been neglected in the search literature. In our sample, some individuals quit after beginning their search on the job, while others quit first and then searched. We hypothesize that, *ceteris paribus*, those who have searched on the job should be better informed about the job market and therefore would likely see a positive influence on their *RW*. Tenure on the next job, *T*, is another variable of some interest. The longer an individual expects to work on the next job, the more cautious he is in setting his reservation wage. This suggests a positive relationship between *RW* and expected tenure.[6]

Consider now the cost variables represented by X^C. Other things being equal, anything that reduces the cost of search will increase *RW*. Therefore, those individuals who receive unemployment insurance benefits, *UIB*, will set a higher *RW*. In addition to this variable, the resources available to finance search activities may also be a factor. These are depicted by such variables as the spouse's income, *SPOUSEY*, other sources of income, *OTHERY*, the availability of past savings, *SAVINGS*, whether the jobseeker is the primary earner in the family, *PRIMEARN*, the number of dependents per earner in the family, *DEPENDNT*, and the marital status of the jobseeker, *MARITAL*. It is hypothesized that availability of nonwage income, *SPOUSEY*, *SAVINGS*, and *OTHERY*, allows a jobseeker to set a higher *RW*, as it permits him to prolong his search by providing a cushion against his depleting household asset portfolio or the need to borrow. A married person, *MARITAL*, is likely to have greater financial responsibilities, other things being equal, than an unmarried person. Consequently, he or she might be expected to set a higher *RW* if wages from work have to meet those commitments. Family size per earner, *DEPENDNT*, also provides an indication of financial responsibilities, and its impact on *RW* may similarly be interpreted. If, however, *PRIMEARN*, *DEPENDNT*, and *MARITAL* are treated as proxies for discount rates, we may then expect these to be associated with a lower *RW*. Search theory predicts that, other things being equal, anything that increases an individual's discount rate will lead to a decrease in *RW* (McCall, 1976).

Results and Their Interpretation

The Constant Reservation Wage Function

Equation 4.4 is used to estimate the constant reservation wage model and the results for persons who quit or were laid off are presented in Tables 4-3 and 4-4 for males and females, respectively. Before we discuss these results, however, several novel features of our specification may be mentioned.

First, we introduce *FLXWAGE* to capture a jobseeker's prior beliefs about the wage offer distribution and, therefore, about wage expectations. Second, *FLXOCCUP*, or search extending to occupations in addition to one's own, is added to capture the loss from nontransferability of occupation-specific human capital. *FLXINDUS*, on the other hand, representing a search in other industries, need not entail such a loss. Rather, by adding to the variability of wage offers, searching among more industries than one should have a positive effect on wage expectations. Third, on-the-job search, *LOOKBLLJ*, is a much neglected aspect of labour market search behaviour, as we noted in Chapter 2. This variable should cast some light on the impact of specialization in search.

In examining the equation results for males as shown in Table 4-3, let us first consider the proxies for wage offer distribution. The variables *AGE*, *AGESQRE*, *TRAINING*, *DUREMP*, log W_{t-1}, *FLXWAGE*, and *LOOKBLLJ* are each highly significant, and the signs of the coefficients bear out theoretical expectations. *AGE*, for instance, has a positive coefficient, as we would expect from the considerations outlined earlier. Its impact is nonlinear, however, as is shown by the negative sign of *AGESQRE*. *TRAINING* has a positive coefficient, as does years of education, *EDUC*, although the latter is not significant. One would expect past wages, W_{t-1}, to be positively related to future wage expectations. The coefficient of log W_{t-1} is positive and also highly significant. The coefficient of *DUREMP*, that is, tenure on the last job, is usually interpreted as a skill proxy and could be expected to exert a positive influence on *RW*. However, if the skills are specific, the same variable would have a negative impact, as we observe, representing loss of skills through job transfers.[7] The variable *FLXWAGE* is a direct measure of wage expectations, and its sign is according to expectations. Lower wage expectations, that is, the willingness to accept a

wage cut, does indeed lower reservation wages, and the coefficient is highly significant. Specialization in search, that is, searching (full-time) while unemployed, relative to the case of initiating a search while still employed, is associated with lower reservation wages. Presumably, conducting a search while still employed contributes to higher wage expectations by encouraging individuals not to accept the first wage offer available, the wage on the current job serving essentially as an offer in hand.

Table 4-3

Empirical Estimates of Constant and Flexible Reservation Wage Models for Jobseekers Who Quit or Were Laid Off Their Previous Job, Males, Canada, 1973-78

	Quit		Laid off	
Variable	Constant *RW*	Declining *RW*	Constant *RW*	Declining *RW*
AGE	.010*	.010*	.004*	.004*
	(4.040)	(4.041)	(5.862)	(5.906)
AGESQRE	-.0001*	-.0001*	-.00005*	-.0005*
	(4.003)	(3.949)	(6.399)	(6.376)
EDUC	.005	.004	-.0004	-.0005
	(1.395)	(1.489)	(.794)	(.912)
AGEDUC	-.0002	-.0002	-.00003***	.00003***
	(1.525)	(1.597)	(1.758)	(1.821)
TRAINING	.010*	.010*	.0002	.0001
	(4.277)	(4.185)	(.460)	(.406)
DUREMP	-.00003**	-.00003**	-.00003*	-.00003*
	(1.970)	(1.977)	(6.642)	(6.150)
log W_{t-1}	.427*	.426*	.625*	.623*
	(20.440)	(20.411)	(56.394)	(56.440)
OCCUP	.000001	.000001	-.000001	-.000001
	(.775)	(.789)	(1.314)	(1.243)
UNIONIZE	.002	.003	.001	.001
	(.361)	(.392)	(.384)	(.400)
FLXINDUS	.037*	.037*	.016*	.015*
	(3.133)	(3.144)	(3.096)	(2.944)
FLXOCCUP	-.039*	-.039*	.034*	.031*
	(3.340)	(3.305)	(6.637)	(6.166)
FLXWAGE	-.031*	-.032*	-.032*	-.032*
	(4.881)	(4.918)	(10.649)	(10.679)
LOOKBLLJ	.039*	.039*	.012*	.012*
	(6.103)	(6.200)	(3.917)	(3.993)
SPOUSEY	.011	.010	-.005	-.004
	(.984)	(.965)	(1.045)	(.944)
OTHERY	-.018	-.018	-.015**	-.013**
	(1.548)	(1.540)	(2.242)	(1.992)
SAVINGS	.014**	.015**	.002	.004
	(1.979)	(2.099)	(.762)	(1.121)
UIB	-.013**	-.011	.004	.009**
	(1.973)	(1.565)	(.738)	(1.934)
URATE	-.004***	-.004***	-.0008	-.002
	(1.646)	(1.810)	(.662)	(1.614)
LOCPRE1	-.043***	-.038	-.078*	-.066*
	(1.728)	(1.484)	(7.764)	(6.578)
LOCPRE2	-.094*	-.090*	-.079*	-.072*
	(4.107)	(3.955)	(9.681)	(8.850)
LOCPRE3	-.082*	-.079*	-.054*	-.050*
	(6.378)	(6.121)	(11.569)	(10.692)
LOCPRE4	-.065*	-.064*	-.072*	-.070*
	(4.409)	(4.347)	(11.638)	(11.366)
LOCPRE5	-.058*	-.060*	-.071*	-.078*
	(2.661)	(2.762)	(6.624)	(7.268)
T	.0004*	.0004*	.0002*	.0002*
	(5.101)	(4.937)	(5.361)	(4.414)
PRIMEARN	.015**	.015**	.010*	.010
	(2.026)	(2.014)	(2.678)	(2.687)
DEPENDNT	.002	.002	-.0002	-.00004
	(.588)	(.568)	(.169)	(.044)

Table 4-3 (concl'd.)

Variable	Quit		Laid off	
	Constant *RW*	Declining *RW*	Constant *RW*	Declining *RW*
MARITAL	.011	.011	.016*	.013*
	(1.358)	(1.337)	(4.123)	(3.513)
D	..	-.0002**	..	-.0006
	..	(1.898)	..	(8.332)*
CONSTANT	-.071	-.070	.043**	.057*
	(1.330)	(1.310)	(2.350)	(3.117)
R^2	.3758	.3770	.4424	.4475
Number of observations	1,962	1,962	7,821	7,821

*Significant at the 1 per cent level.
**Significant at the 5 per cent level.
***Significant at the 10 per cent level
SOURCE Estimates by authors.

As explained earlier, the cost side is captured by variables representing the financial burden imposed by unemployment. Being married, *MARITAL*, serves to raise the *RW* for males, as does family size, *DEPENDNT*. An individual who has savings can afford to wait longer for an appropriate wage offer and may set a higher reservation wage, as is suggested by the positive coefficient for *SAVINGS*. The availability of other nonwage income, *SPOUSEY*, raises the *RW* for males, but the coefficient is not significant. The variable *UIB* operates in the right direction only for those laid off. The reason for the perverse sign for males who quit may be that unemployment insurance regulations penalize them by disqualifying claimants from unemployment insurance compensation for a period of up to six weeks.

Among other variables, *URATE* is marginally significant for males who quit but loses its significance for those laid off. The set of dummy variables for different labour markets, *LOCATION*, is highly significant. Finally, tenure on the next job, *T*, has a positive coefficient as expected and is highly significant.

Although somewhat weaker, these results generally hold for females as well,[8] as can be observed in Table 4-4. On the basis of these results, we conclude that search theory variables are able to explain a large proportion of the observed variation in *RW*. It appears that jobseekers do behave as if they have a reservation wage strategy in mind. The robustness of results can be seen from the fact that those who quit as well

Table 4-4

Empirical Estimates of Constant and Flexible Reservation Wage Models for Jobseekers Who Quit or Were Laid Off Their Previous Job, Females, Canada, 1973-78

Variable	Quit		Laid off	
	Constant *RW*	Declining *RW*	Constant *RW*	Declining *RW*
AGE	.007	.006	.004*	.004*
	(1.604)	(1.530)	(3.135)	(3.124)
AGESQRE	-.00005	-.00004	-.00005*	-.00005*
	(.973)	(.863)	(3.240)	(3.210)
EDUC	.009***	.010	-.0005	-.0006
	(1.644)	(1.610)	(.417)	(0.531)
AGEDUC	-.0003	-.0003	.00001	.00002
	(1.463)	(1.448)	(.518)	(.645)
TRAINING	.004	.004	-.0002	-.0002
	(.468)	(.609)	(.305)	(.382)
DUREMP	-.00001	-.000005	-.00002***	-.00002
	(.333)	(.175)	(-1.660)	(1.319)
log W_{t-1}	.375*	.384*	.501*	.504*
	(9.235)	(9.426)	(18.276)	(18.465)
OCCUP	-.000004***	-.000004***	-.000002	-.000002
	(1.759)	(1.650)	(1.402)	(1.402)

Table 4-4 (concl'd.)

Variable	Quit		Laid off	
	Constant *RW*	Declining *RW*	Constant *RW*	Declining *RW*
UNIONIZE	-.018	-.016	-.003	-.003
	(1.568)	(-1.406)	(.464)	(.351)
FLXINDUS	-.030	-.028	-.002	.001
	(1.598)	(1.481)	(.143)	(.134)
FLXOCCUP	.0195	.018	-.011	-.009
	(1.024)	(0.960)	(.011)	(.846)
FLXWAGE	-.003	0.004	-.017**	-.015**
	(.315)	(.351)	(-2.411)	(2.154)
LOOKBLLJ	.022**	.023**	.004	.003
	(2.056)	(2.109)	(.546)	(.441)
SPOUSEY	-.018	-.014	-.010	-.008
	(1.197)	(.986)	(1.026)	(.823)
OTHERY	.026	.025	-.007	-.007
	(1.540)	(1.482)	(.632)	(.570)
SAVINGS	.002	.003	.008	.009
	(.231)	(.298)	(1.264)	(1.398)
UIB	.010	.014	.007	.010
	(.933)	(1.244)	(.824)	(1.226)
URATE	.011*	.010*	.0006	-.002
	(3.106)	(2.636)	(.228)	(.596)
LOCPRE1	-.119	-.105	-.016	-.007
	(.851)	(.752)	(.346)	(.158)
LOCPRE2	-.120*	-.108*	-.079*	-.067*
	(3.266)	(2.907)	(4.371)	(3.702)
LOCPRE3	-.111*	-.108*	-.045*	-.042*
	(3.837)	(3.680)	(3.243)	(2.996)
LOCPRE4	-.033	-.031	-.046*	-.048*
	(1.084)	(1.052)	(3.083)	(3.257)
LOCPRE5	-.087***	-.095*	-.021	-.033
	(1.851)	(2.003)	(-.820)	(1.318)
T	.0005*	.0005*	.0004*	.0003*
	(5.208)	(4.862)	(4.478)	(3.687)
PRIMEARN	.150	0.016	.007	.009
	(1.371)	(1.403)	(.936)	(1.099)
DEPENDNT	.012*	.012*	.0005	.0007
	(3.111)	(3.142)	(.518)	(.628)
MARITAL	.002	.002	-.004	-.004
	(.114)	(.110)	(.424)	(.389)
D	..	-.0003**	..	-.0004*
	..	(-2.300)	..	(4.020)
CONSTANT	-.195**	-.195**	-.052	-.027
	(2.13)	(2.135)	(1.420)	(.729)
R^2	.2970	.3014	.2631	.2706
Number of observations	870	870	1,649	1,649

*Significant at the 1 per cent level.
**Significant at the 5 per cent level.
***Significant at the 10 per cent level.
SOURCE Estimates by authors.

as those laid off and males as well as females seem to follow this strategy.

Flexibility of RW and the Impact of Duration of Unemployment

Turning now to the issue of *RW* flexibility, we may ask whether *RW* declines, remains constant, or increases as search duration lengthens. Estimated coefficients for declining *RW* are presented in Tables 4-3 and 4-4, for males and females, respectively. Comparing these results with coefficients for constant *RW* in these tables shows little change between the two models. In other words, inclusion of the duration variable does not affect the stability of other

coefficients, which provides support for our specification. Our results suggest that the reservation wage declines 0.02 per cent per week (in real terms) for males who quit and 0.06 per cent per week for males who were laid off, which translates into a monthly rate of decline of 0.08 per cent and 0.24 per cent, respectively. Since the total sample is weighted heavily in favour of those laid off, the weighted rate of monthly decline comes to 0.20 per cent per month for all males. The lower rate of decline for those who quit is understandable in that, being voluntarily unemployed, they are less keen to revise their wage expectations downward. Females who quit also reveal the same behaviour relative to females laid off, the rate of monthly decline being 0.12 and 0.16 per cent, respectively. For females overall, the decline rate is 0.15, somewhat lower than for males.

Empirical research, by and large, supports the notion that *RW* declines with the length of unemployment. However, a wide variety of results is reported. Stephenson (1976) finds a decline of 0.06 per month, compared with 0.38 reported in Kasper (1967), 1.25 in Fishman, Allen, Burge, and Eaton (1968), and 2.38 in Barnes (1975).[9] For a variety of reasons, these results are not comparable with ours. First, excepting Stephenson, the definition of reservation wage used by these authors is not the concept implied by the search hypothesis. Second, Kasper, Barnes, and Fishman et al. do not control for many of the economic and demographic factors that are known to affect the cost and returns of search. Stephenson uses the appropriate concept of a reservation wage below which an offer is rejected, the concept also employed in Kiefer and Neumann (1979) and in this study. The very low estimate of a decline in the *RW* of 0.06 per cent per month obtained by Stephenson may be partly due to the fact that his sample of youths is least likely to include those individuals with the largest relative decline.

Kiefer and Neumann arrive at a much higher rate of decline of 2.5 per cent per month. Part of the reason why our results may be lower than those based on U.S. data may lie in the significant differences in the unemployment insurance programs in the two countries. Our data span the five-year period 1973-78, during which time some modifications in the Canadian benefit structure and eligibility conditions were introduced. Although unemployment insurance provisions in the United States vary state by state, it is by and large true that the Canadian unemployment insurance system has eligibility requirements that are less stringent and more universal than those in the United States. The benefit rate in Canada is generally higher, and the duration of benefit entitlement is generally longer. Similarly, the treatment accorded to claimants who quit is also more generous. Consequently, the effective value of income replacement through unemployment insurance is likely to be a larger fraction for Canadians, which suggests a lower rate of decline in their reservation wages, compared with U.S. jobseekers.

Flexibility of RW and the Impact of Labour Market Characteristics

Underlying the empirical results presented above is the assumption that, except for the factors explicitly held constant in the regression equations, individuals included in the sample are statistically equivalent, in the sense that they are sampling from a given wage offer distribution and are facing similar cost conditions. The validity of this assumption is greater, the more homogeneous the sample. It is possible that the observed decline in *RW* is different for groups of workers who are more homogeneous among themselves than is the total sample of workers.

The flexibility of *RW* may be classified according to the labour market sector in which the worker operates. While the theories of dual labour markets and market segmentation generally have not received unqualified acceptance as theoretical paradigms, the notion is commonly accepted that there do exist widely differing labour markets among which the mobility of labour is significantly limited. It is believed by many that low-wage workers move from one dead-end job to another without much hope for an improvement in earnings.[10] This suggests that the wage dispersion for low-wage workers may be small. For these groups, one impact of social legislation such as minimum wage laws is to truncate the lower end of the wage distribution and to reduce the wage dispersion facing these jobseekers. At the same time, legislation such as the unemployment insurance act sets lower limits on the cost of undertaking (unemployed) job search. The impact of unemployment insurance is asymmetrical between low-wage and high-wage workers. The ceiling on insurable earnings, which is part of such legislation, means that the effective replacement ratio through these benefits is lower as wage levels exceed the ceiling. These considerations suggest that, both on the demand side (wage dispersions) and on the cost side (cost of searching), there are significant differences in behaviour towards declining *RW* between high-wage and low-wage workers, such that the latter exhibit less flexibility. As an extreme example, workers earning the minimum wage obviously cannot lower their asking wage below that floor.

Unionization provides another delimiting criterion in *RW* flexibility. Wage behaviour in a labour market where workers are organized may differ significantly from that in a nonunionized labour market. Part of the differences may lie in wage levels, and the structure of the product markets may also vary. The search strategy employed by union and nonunion workers may also differ.[11]

Flexibility of *RW* may also differ according to demand conditions in the labour market. The mean of the wage offer distribution is likely to vary with cyclical changes, increasing under buoyant conditions and decreasing when demand is slacking off. To the extent that individuals do not foresee perfectly the expected changes in market demand conditions, their observed behaviour towards *RW* will be affected. Moreover, risk-averse individuals are likely to differ from risk lovers in their responses to *RW*, the former group exhibiting greater flexibility.

The impact of these three labour market features on the flexibility of *RW* among workers who quit are reported in Table 4-5. The total sample is segregated according to the wage level, union status, and rate of unemployment facing each worker at the start of the unemployment spell. Equation 4.5 is used in each case to estimate the flexibility of reservation wages over the period of search.

Table 4-5

Changes in the Reservation Wage of Jobseekers Facing an Additional Week of Unemployment as Induced by the Worker's Expected Wage Level, His Union Status, and the Prevailing Unemployment Rate, by Sex, Canada, 1973-78

	Male	Female
	(Per cent)	
Expected wage level		
Low	insignificant	insignificant
Medium	-.06*	-.04*
High	-.09*	-.2*
Union status		
Unionized	-.05*	-.04*
Nonunionized	insignificant	insignificant
Unemployment rate		
7.0 per cent	-0.4**	insignificant
7.1 to 8.0 per cent	-.05***	insignificant
8.1 to 9.0 per cent	insignificant	-.14*
9.0 per cent	-.07***	-.17*

*Significant at the 1 per cent level.
**Significant at the 5 per cent level.
***Significant at the 10 per cent level.
SOURCE Estimates by authors.

Looking first at the wage categories, we observe that low-wage workers, whether male or female, tend to exhibit less flexibility in wage demands compared with higher-wage groups. This is in accordance with theoretical expectations. There are a number of interrelated reasons why high-wage workers may exhibit greater *RW* flexibility. First, unemployment insurance benefits leave uncompensated a larger part of wage income for high-wage workers than for low-wage workers. Second, the rate of depreciation of human capital when unemployed is likely to be larger for high-wage earners. Third, since the low-wage earners are concentrated in the secondary labour market, their wage expectations are not high to begin with. These expectations are, therefore, unlikely to be much modified by a longer duration of unemployment. Finally, low-wage workers at or near the minimum wage level have little room for downward flexibility in their wage demands.

As for union status, contrary to popular belief, unionized workers exhibit a greater decline in reservation wages than the average worker who quits (see Tables 4-3 and 4-4). It should be noted that the behaviour of reservation wages of unionized *unemployed* workers is quite a different issue than the behaviour of wages of unionized *employed* individuals. Rigidity in the wage demands for the latter does not imply similar behaviour for the former group. The greater flexibility in *RW* among unionized workers reported in Table 4-3 can be explained by factors operating on the demand side as well as on the supply side of the market. Consider the supply side first. Nonunion workers are paid low relative to the unionized workers; in our sample, the difference is about 20 per cent. We have seen above that, for the reasons already mentioned, low-paid workers exhibit a lower rate of decline. Both minimum wages and unemployment insurance payments act as a floor, and there is less margin for decline in asking wages.

The demand side of the market may be reflected in the union preference function.[12] From a theoretical standpoint, a union can be an employment maximizer or a wage maximizer. For a wage-maximizing union, those members who happen to be laid off get the worst of both worlds, as the union may be unwilling or unable to help them find a job. In cases where their preunemploymment wages have been bid high, once unemployed, these workers will have to reduce their asking wages that much more. Our results appear to be consistent with this hypothesis. On the other hand, they are also consistent with the spirit of contract theory, which holds that worker-employer contracts, implicit on the part of individual workers but explicit in the case of unions, tend to ensure

wage stability at the cost of fluctuations in employment.

The prevailing unemployment rate may also contribute to a decline in the reservation wage of jobseekers in various labour markets, according to the regression results reported in Table 4-5. In the absence of better proxies, these rates are used as cyclical indicators. Search theory suggests that the mean of wage offer distributions confronting individuals improves as economic conditions improve, which suggests higher reservation wages. However, to the extent that these fluctuations are foreseen at the commencement of the search process, they should have no effect on the reservation wages. Unanticipated changes in the wage offer distribution will, of course, lead to changes in *RW*. The view seems widespread that wage demands are likely to be more flexible under recessionary conditions. We find support for this hypothesis in Table 4-5. A week of unemployment leads to a greater decline in *RW* the higher the unemployment rate at the beginning of the process. A possible explanation is that risk-averse individuals dominate the sample or, alternatively, that individuals become averse to risk under these conditions. The decline in *RW* is more pronounced for women and may signify a version of the added-worker scenario: during cyclical recession, women workers may be more flexible in wage demands because they wish to return to work more speedily in order to augment family income.

Summary

This chapter explores wage-setting behaviour in Canadian labour markets. The major conclusion to emerge is that individuals do respond to wage expectations and to costs of unemployment. They appear to balance these factors in a way suggesting that they are following a reservation wage strategy. Hence, a portion of the variation in the unemployment duration is explained by search theory considerations, that is, an employment opportunity is accepted only if it is optimal. Frictions in accepting employment, therefore, are part of the observed unemployment phenomenon.

These conclusions hold for both males and females. The fact that our sample is drawn from communities where major layoffs have occurred strengthens the importance of search theory explanations. The average duration of unemployment is high in our sample (see Chapter 5). This length of unemployment is not usually considered to be of the frictional variety. Hence, support for the search theory explanation is all the more significant, since it comes from data related to depressed labour markets.

Our results provide some evidence of the operation of labour market adjustment processes. The asking wages (reservation wages) appear not to be set arbitrarily but to change according to economic circumstances. In responding to changing economic stimuli, unemployed individuals behave in an optimizing manner, and they set their reservation wages and their duration of unemployment in a way that is consistent with an optimizing behaviour.

In addition to the behaviour of reservation wages, we find other evidence, as shown in Table 4-3, of the responsiveness of individuals to labour market conditions. Some 40 per cent of individuals in the sample expressed a willingness to accept a lower wage – a very high percentage indeed. Jobseekers may exhibit other forms of (nonwage) flexibility as well. About 62 per cent of males and 48 per cent of females looked for work in industries besides their own, and a similar proportion searched in alternative occupations. Also indicative of responsiveness is the average tenure of workers with previous employers, which turns out to be only slightly longer than two years. We find also that nearly one-third of the individuals in the sample engaged in search on the job, which adds about 3 per cent to increases in postunemployment wages.

Of special interest is the flexibility exhibited by reservation wages as the duration of search increases. We find that *RW* declines as duration lengthens. The average rate of decline for the sample as a whole is somewhat low, only 0.20 per cent per month, and this may be partly due to the high income-replacement floor provided by unemployment insurance benefits. This argument is supported by the fact that high-wage workers exhibit a larger decline than low-wage workers. It shall be borne in mind that unemployment insurance replaces a larger fraction of incomes for the latter. The higher rate of decline for union workers relative to others can also be explained, in part, by the relatively higher wages of the former and by the behaviour of unions. Adding to the evidence on flexibility is the fact that reservation wages decline more when employment conditions worsen; workers exhibit a greater aversion to risk under these conditions.

5 Productivity and Duration of Job Search

In this chapter, we examine first the issue of the productivity of search time and, second, the determinants of search duration. These issues are of particular interest for public policy because most western societies subsidize job search. An explicit objective of the unemployment insurance system is to reduce the cost of search for unemployed jobseekers so as to enable them to engage in productive job search. While it is often contended that the unemployment insurance system induces work disincentive and contributes to unemployment,[1] it is also frequently argued that longer periods of search permit unemployment insurance beneficiaries to obtain a more satisfactory or better-paying job. It is this debate with which we are concerned.

Theoretical models of job search view unemployment as productive search activity. Central to these models is the notion that search is an investment of time and resources in order to secure an acceptable offer. Unemployed searchers acquire labour market information that helps them to maximize their lifetime income. Search may be viewed as a matching process in which individuals with given labour productivity characteristics look for information related to jobs that most closely match their requirements. With improved matching between jobs and people, the overall productivity of resources may be improved.

Search literature has emphasized the movement of wage rates over the period of search as a prime indicator of search productivity, which is measured, *ceteris paribus*, in terms of the change between the preunemployment and postunemployment wages. If search is viewed as an investment of time to seek higher postunemployment wages relative to previous wages, then we should expect to find an increase in wage offers during the search, which would indicate that the search is productive. Accordingly, our analysis focuses on the behaviour of relative wage changes experienced by unemployed job searchers over the search duration, and we treat this as an indicator of the productivity of search.[2]

Empirical Specification

As argued earlier, standard search theory models suggest that the reservation wage, *RW*, in functional form can be specified as:

$$(5.1) \qquad RW = f_1 (R, C)$$

where

R = the expected returns from search, and
C = the cost of search.

The underlying search theory hypothesis is that R is positively related to *RW* while C is negatively related. In turn, the expected returns from search depend upon the mean and the standard deviation of the distribution of possible wage offers facing an individual. The expected duration of search, D, is given by:

$$(5.2) \qquad D = f_2 (C, R)$$

According to equation 5.2, given the expected returns to search, an increase in C will decrease the expected duration of search. Similarly, holding C constant, an increase in the mean of the wage offer distribution will reduce D by increasing the probability of an acceptable offer in any period of search.

Our objective here is to estimate the returns to job search, not the reservation wage. For this purpose, the following two-equation (recursive) model is drawn from the underlying search theory. In our estimation equation, the returns to search depend upon the duration of search, D, and the moments of the wage offer distribution captured by the set of variables denoted by X. This relationship is described by equation 5.3, where the wage change serves as the dependent variable. Equation 5.4 gives the determinants of the duration of search, based on equation 5.2.

$$\log (W_t/W_{t-1}) = \beta_0 + \beta_1 D_t + \sum_{j=2}^{m} \beta_j X^j + u \tag{5.3}$$

$$D = \alpha_0 + \sum_{i=1}^{n} \alpha_i X_i^c + \sum_{j=1}^{m} \alpha_j X^j + e \tag{5.4}$$

where

W_t = real (in 1971 dollars) weekly postunemployment wages,

W_{t-1} = real (in 1971 dollars) weekly preunemployment wages,

$\log (W_t/W_{t-1})$ = the log of the ratio (W_t/W_{t-1}),

D = the duration of search in weeks,

X^j = the 'j'th variable,

X_i^c = the vector at cost-of-search variables,

α, β = the vector of coefficients, and

e, u = the disturbance terms.

Equation 5.3 estimates the returns to search. The dependent variable is W_t/W_{t-1} in logarithmic form, where W_t is the actual postunemployment wage obtained by the jobseeker and is treated as a proxy for the best offer that awaits the searcher. Three sets of variables are used to explain the behaviour of relative wage changes. The first determines the mean and the standard deviation of the wage offer distribution facing an individual. A second set consists of control variables. Finally, the most important variable, from our point of view, in equation 5.3 is the duration of search, D, and the focus of our attention is on the sign of its coefficient. If search time is indeed productive, we would expect $\beta_1 > 0$.

The wage offer distribution facing an individual depends on the market productivity characteristics of the individual and on local labour market conditions. To capture an individual's market productivity characteristics, we use such variables as *AGE*, *EDUC*, and *TRAINING*. Variable *AGESQRE* is used to allow for possible nonlinearities in *AGE*. Job tenure with a previous employer, *DUREMP*, is used as a measure of experience. We use two variables to represent labour market conditions: *URATE*, and a set of dummies representing regions, *LOCPRE*1 to *LOCPRE*5. Among the set of control variables, occupation, *OCCUP*, and unionization, *UNIONIZE*, at the previous job are used to represent both the labour market characteristics as well as the productivity characteristics of an individual. On-the-job search, *LOOKBLLJ*, represents the jobseeker's knowledge of employment opportunities that could affect the probability of receiving a job offer. Finally, willingness to move, *FLXMOVE*, opens up broader avenues for employment opportunities and, other things being equal, may also affect the mean of the wage offer distribution.

Equation 5.4 describes the determinants of the (expected) duration of search. The expected duration of search depends on the cost of search as well as on the wage distribution. The variables pertainng to market productivity characteristics and to the labour market again are used to represent the distribution of offers. Other things being equal, anything that raises the expected wage increases the length of the search, but anything that increases actual offers (given expectations) reduces the search duration. The cost of search, the resources available to finance search activities, and the financial responsibilities of each jobseeker affect the duration of search. The cost of search includes the opportunity cost of unemployment, which is represented by the jobseeker's preunemployment wages, log W_{t-1}, and by the jobseeker's unemployment insurance benefit status, *UIB*. Other things being equal, the greater the cost of search, the lower the *RW* and the shorter the duration of search. To depict the resources available to finance search activities, we use such variables as spouse's income, *SPOUSEY*, other sources of income, *OTHERY*, and the availability of past savings, *SAVINGS*. It is hypothesized that availability of nonwage income, *SPOUSEY*, *SAVINGS*, and *OTHERY*, induces a jobseeker to set a higher *RW*, as it provides a cushion against his depletion of the household's asset portfolio or the need to borrow. Consequently, the duration of search is prolonged. Primary earner status in the family, *PRIMEARN*, number of dependents per earner, *DEPENDNT*, and marital status, *MARITAL*, are variables that measure the financial responsibilities of the jobseeker. This would tend to lower the *RW* and, all else being equal, reduce the expected duration of search. Finally, three variables that may affect the duration of search are introduced as controls. These variables represent, respectively, whether an individual searches over different industries, *FLXINDUS*, or different occupations, *FLXOCCUP*, and is willing to accept a wage cut, *FLXWAGE*.

Equations 5.3 and 5.4 are estimated separately by sex for those who quit their jobs voluntarily and those laid off. The rationale for incorporating the causes for job separation is that the motivations of individuals initiating a spell of unemployment voluntarily may be different from those of individuals laid off, who are, by definition, forced into their job search involuntarily. In addition, layoff status of a jobseeker may serve as a

negative signal to prospective employers that the productivity of the worker in question has been judged by the previous employer to be below the wages paid to him or her.[3]

A number of econometric problems preclude estimating equation 5.3, which is a reduced-form equation, through the use of ordinary least squares (OLS). First, if we use a single-equation framework, the coefficient on D may be interpreted as the determinant of relative reservation wages, rather than of returns from search, and it is the latter that we wish to estimate.[4] Second, the fact that the duration of search itself is endogenous in the search process violates the OLS assumption that the variables on the right-hand side of equation 5.3 are exogenous. Therefore, a two-stage least square (TSLS) procedure is used to estimate this equation in order to avoid the simultaneous equation bias that might otherwise result. Since the cost-of-search variables directly influence the search duration and do not directly influence the expected wage offer, equation 5.3 passes the test of statistical identification. We estimate the equation by both OLS and TSLS; however, more confidence should be attached to the TSLS estimates, for the reasons discussed above.

Two possible biases in our estimates may be noted. First, the fact that those persons who moved out of the communities surveyed are not in the sample might mean that some of the more productive searchers are not reported in the data. In such an event, the coefficient of D in equation 5.3 may be biased downward. Second, to the extent that omitted variables such as ability and so on are contained in the error terms of both equations 5.3 and 5.4 and are correlated with the variables on the right-hand side of these equations, there may be an asymptotic bias to a TSLS estimation of equation 5.3. However, the direction of such a bias is not obvious because the variables correlated with ability, *EDUC*, *DUREMP*, W_{t-1}, and so on, may have different effects on D.

Results and Their Interpretation

The Productivity of Search Time

Before we present the regression results, a preliminary look at the data is instructive. From the summary statistics presented in Table 5-1, we observe that workers who quit, whether male or female, made a wage gain, while workers laid off suffered a loss. Since our wage data are adjusted for price changes (1971 = 100), these results should be viewed as a change in real wages. Among those who quit, the increase was larger for males – 6 per cent, compared with 3.5 per cent for females. Among those laid off, females lost about 3.5 per cent, on average, while the wage loss for males was slightly more than 1 per cent.

Table 5-1

Change in Postunemployment Wages over Preunemployment Wages of Jobseekers Who Quit or Were Laid Off Their Previous Job, by Sex, Canada, 1973-78

	Quit	Laid off
	(Per cent)	
Male	6.00	-1.14
Female	3.50	-3.50

SOURCE Estimates by authors.

These data are consistent with the hypothesis that voluntary (quit) turnover leads to improved postunemployment wages, whereas involuntary (laid off) turnover results in reduced wages. One explanation may be that individuals making decisions to quit are likely to have better information about job opportunities and prospective wage offers. For persons laid off involuntarily, on the other hand, the decision to leave the job is obviously not their own. Layoff status may also be a signal to firms that the worker may be less desirable than others. Furthermore, permanent layoffs are a function of unfavourable market conditions, which restrict re-employment opportunities.[5]

Table 5-2

Distribution of Jobseekers Whose Postunemployment Wages Were Higher or Lower Than Their Preunemployment Wages, by Sex and Reason for Separation from Their Previous Job, Canada, 1973-78†

	Jobseekers	
	Wage gain	Wage loss
	(Per cent)	
Male		
Quit	46.5	53.5
Laid off	41.7	58.2
Female		
Quit	48.0	51.9
Laid off	40.2	59.7

†A few workers had identical preunemployment and postunemployment wages, and are not included in this table.
SOURCE Estimates by authors.

It is noteworthy that not all those who quit registered a wage gain, nor all those laid off a wage loss. The proportion of those who did experience a wage gain was higher among individuals who quit than among those who were laid off (Table 5-2).

Table 5-3

Empirical Estimates of the Wage Change Model for Determining the Productivity of Search Time for Jobseekers Who Quit or Were Laid Off Their Previous Job, Males, Canada, 1973-78

	Quit		Laid off		All males	
Variable	OLS†	TSLS‡	OLS†	TSLS‡	OLS†	TSLS‡
AGE	.0013	.001	.001**	.002*	.001***	.001***
	(.51)	(.52)	(2.24)	(2.33)	(1.69)	(1.63)
AGESQRE	-.000007	-.00001	-.00002**	-.00002**	-.00001***	-.00001***
	(.30)	(.42)	(2.25)	(2.34)	(1.75)	(1.69)
EDUC	.004	.003	.00002	.00005	.0002	.0001
	(1.09)	(.81)	(.03)	(.08)	(.25)	(.24)
AGEDUC	-.0002	-.0001	.000001	.000001	-.000002	-.000002
	(1.22)	(1.01)	(.09)	(.08)	(.16)	(.15)
TRAINING	.004	.004	-.00	.00001	.00008	.00008
	(1.27)	(1.46)	(.002)	(.02)	(.19)	(.19)
DUREMP	-.00003**	-.00003***	-.00003*	-.00003*	-.00003*	-.00003*
	(1.92)	(1.81)	(4.79)	(4.80)	(5.10)	(4.87)
OCCUP	012	.012	.010**	.010**	.012*	.011*
	(1.34)	(1.29)	(1.92)	(2.00)	(2.62)	(2.57)
UNIONIZE	-.040*	-.040*	-.021*	-.021*	-.025*	-.025*
	(5.20)	(5.20)	(6.11)	(6.08)	(8.01)	(8.02)
FLXMOVE	.002	.002	.004	.004	.003	.004
	(.32)	(.27)	(1.30)	(1.18)	(1.18)	(1.19)
QL	..	..	..	..	-.003	-.004
	..	..	..	..	(.64)	(.36)
D × *QL*	..	..	..	..	.0004*	.0005
	..	..	..	..	(2.80)	(.94)
LOOKBLLJ	.033*	.031*	.009*	.009*	.014*	.014*
	(4.28)	(3.86)	(2.87)	(2.81)	(4.53)	(4.52)
URATE	-.014*	-.013*	-.005*	-.005*	-.007*	-.007*
	(5.24)	(4.74)	(4.57)	(3.92)	(6.85)	(6.28)
LOCPRE1	.054**	.038	-.029*	-.033*	-.014	-.013
	(1.84)	(1.14)	(2.67)	(2.65)	(1.40)	(1.11)
LOCPRE2	.0008	-.008	-.005	-.008	-.0007	-.0002
	(.03)	(.29)	(.58)	(.84)	(.10)	(.02)
LOCPRE3	.005	-.006	.010**	.008	.009***	.009
	(.32)	(.31)	(2.03)	(1.32)	(1.84)	(1.56)
LOCPRE4	-.052*	-.056*	-.040*	-.041*	-.043*	-.043*
	(2.96)	(3.09)	(6.13)	(6.10)	(7.07)	(6.73)
LOCPRE5	-.049**	-.043***	-.047*	-.044*	-.047*	-.048*
	(1.90)	(1.65)	(4.09)	(3.77)	(4.57)	(4.47)
D	-.0003***	.0004	-.0006*	-.0004	-.0006*	-.0007
	(1.76)	(.60)	(8.27)	(.93)	(8.08)	(1.43)
CONSTANT	.098***	.094	.035**	.027	.062*	.064*
	(1.65)	(1.57)	(2.15)	(1.30)	(4.01)	(3.00)
R^2	0.06	..	0.04	..	0.04	..
F-ratio	6.91	..	18.6	..	22.33	..
Number of observations	1,931	1,931	7,619	7,619	9,550	9,550

†Ordinary least squares.
‡Two-stage least squares.
*Significant at the 1 per cent level.
**Significant at the 5 per cent level.
***Significant at the 10 per cent level.
SOURCE Estimates by authors.

Conversely, the proportion experiencing a wage loss was higher among those who were laid off, whether male or female.

We now turn to the question of whether there is a systematic relationship between the duration of search and the relative postunemployment wage. In Tables 5-3 and 5-4, we present estimated parameters for equation 5.3 – the relative wage change equation – by sex, for those who quit their previous jobs, those who were laid off, and both.[6] Our focus is on the coefficient for variable *D*, the duration of search.

Table 5-4

Empirical Estimates of the Wage Change Model for Determining the Productivity of Search Time for Jobseekers Who Quit or Were Laid Off their Previous Job, Females, Canada, 1973-78

Variable	Quit		Laid off		All females	
	OLS†	TSLS‡	OLS†	TSLS‡	OLS†	TSLS‡
AGE	.004	.005	.001	.002	.002	.001
	(.93)	(.88)	(1.06)	(1.03)	(1.47)	(.77)
AGESQRE	-.00005	-.00003	-.00002	-.00002	-.00003***	-.00002
	(.92)	(.47)	(1.31)	(1.07)	(1.67)	(.88)
EDUC	.003	.002	-.0008	-.002	-.001	-.004
	(.42)	(.25)	(.73)	(1.62)	(.90)	(2.13)
AGEDUC	-.00009	-.0001	.00002	.00006***	.00002	.00009*
	(.37)	(.42)	(.65)	(1.85)	(.77)	(2.31)
TRAINING	-.003	.012	-.0005	-.0008	-.0006	-.001
	(.39)	(1.09)	(.72)	(.88)	(.92)	(1.14)
DUREMP	-.00008**	-.000005	-.00003*	.00001	-.00004*	.000
	(2.27)	(.11)	(2.21)	(.47)	(2.95)	(.41)
OCCUP	.026**	.010	.016***	.006	.022*	.016
	(2.02)	(.56)	(1.87)	(.56)	(3.10)	(1.56)
UNIONIZE	-.046*	-.015	-.036*	-.028*	-.040*	-.033*
	(3.60)	(.84)	(4.65)	(2.65)	(5.97)	(3.50)
FLXMOVE	.020***	.021	-.007	.009	.003	.002
	(1.63)	(1.25)	(.86)	(.78)	(.49)	(.22)
QL	..	..	..	..	.013	-.166*
	..	..	..	..	(1.58)	(3.96)
D × QL	..	..	..	..	-.00009	.006*
	..	..	..	..	(.52)	(4.29)
LOOKBLLJ	.015	.021	.005	.0005	.008	.003
	(1.21)	(1.30)	(.71)	(.05)	(1.22)	(.33)
URATE	-.002	-.015**	-.009*	-.024	-.005**	-.017*
	(.54)	(2.20)	(3.14)	(4.68)	(2.01)	(3.96)
LOCPRE1	-.004	.063	.077	.11***	.042	.038
	(.02)	(.30)	(1.49)	(1.63)	(.83)	(.53)
LOCPRE2	.051	.200*	.025	.119*	.021	.115*
	(1.29)	(3.18)	(1.27)	(3.57)	(1.22)	(3.54)
LOCPRE3	.018	.066	.026***	.048**	.019	.041**
	(.58)	(1.58)	(1.78)	(2.37)	(1.40)	(2.07)
LOCPRE4	.049	.062	-.033**	-.046**	-.009	-.018
	(1.48)	(1.41)	(2.09)	(2.11)	(.62)	(.87)
LOCPRE5	.005	-.100	-.023	-.123*	-.014	.112*
	(.10)	(1.37)	(.82)	(2.87)	(.57)	(2.72)
D	-.0006*	-.004*	-.0006*	-.0046*	-.0006*	-.0064*
	(4.20)	(5.15)	(5.31)	(5.06)	(4.84)	(4.85)
CONSTANT	-.096	.057	.066***	.281*	.020	.292*
	(.95)	(.41)	(1.81)	(4.11)	(.60)	(3.81)
R^2	0.10	..	0.07	..	0.08	..
F-ratio	5.55	..	7.53	..	10.48	..
Number of observations	860	860	1,610	1,610	2,470	2,470

†Ordinary least squares.
‡Two-stage least squares.
*Significant at the 1 per cent level.
**Significant at the 5 per cent level.
***Significant at the 10 per cent level.
SOURCE Estimates by authors.

Except for the TSLS estimation for males who quit, the coefficient of *D* is negative and statistically significant, mostly at the 1 per cent level. An additional week of search, then, reduces postunemployment wages relative to preunemployment wages. The productivity of the additional search time, therefore, is negative. However, the percentage change per week in the postunemployment wage is very small relative to the wages at the previous job.

While the coefficient of *D* is statistically significant for each of the six estimates (OLS and TSLS) for

females, only three are significant for males. Moreover, each of the three TSLS estimates for males is insignificant and is, in fact, positive in one case. Consequently, the conclusion that the contribution of search time is negative for males needs to be qualified.

The difference in results for males and females prompts a closer look at the pattern of wage gains over the search duration. As shown in Table 5-5, a large proportion of jobseekers in our sample have experienced long spells of unemployment. Hence, it would seem appropriate to separate the long-term unemployed from those with short spells, on the assumption that long-term unemployment may be due to structural factors.

Table 5-5

Distribution of Jobseekers According to the Duration of Search, by Sex and Reason for Separation from Their Previous Job, Canada, 1973-78

	Jobseekers	
	Search duration less than 15 weeks	Search duration more than 15 weeks
	(Per cent)	
Male		
Quit	46	54
Laid off	37	63
All separations	39	61
Female		
Quit	38	62
Laid off	32	68
All separations	34	66

SOURCE Estimates by authors.

Critics of search theory argue that the theory cannot explain total unemployment, since much of observed unemployment is for long spells exceeding six months.[7] This type of hard core unemployment can hardly be explained by frictions in the labour market, but rather by the absence of jobs. To take this view into account, we use 15 weeks as the dividing line, which approximates the average duration of unemployment for the Canadian labour force (the average duration was close to 15 weeks during the period 1973-77).[8] Using this criterion, wage change equations are separately estimated for the two groups of data, and the magnitude of the *D* coefficients is presented in Table 5-6.[9]

These results provide a much richer description of the pattern of search productivity. It appears that search productivity is segmented over the duration of search. For spells lasting 15 weeks or less, an additional week of search contributes positively to wage improvement. This is true for males as well as for females, regardless of the reason for the separation initiating the unemployment spell.

For spells lasting more than 15 weeks, the contrast between the OLS and TSLS results for the male sample may be noted. While the OLS results indicate that the productivity of an additional week of search is negative, the TSLS estimates suggest a positive effect. As pointed out by Kahn (1978), one might interpret the OLS findings as measuring a declining relative reservation wage. From our present perspective, then, greater confidence should be attached to TSLS estimates because of our interest in measuring returns from search. The simultaneous-equation (recursive) framework makes one more confident that the determinants of returns from search rather than of relative reservation wage are being estimated in equation 5.3. The TSLS results indicate that spells lasting more than 15 weeks result in a lowering of search productivity for females, with a reduction of 0.5 per cent a week, or about 2 per cent a month (in 1971 dollars), in postunemployment weekly wages relative to previous wages. For males, in contrast, the productivity of search time is positive; the value of an additional week of search is in the range of 0.5 to 2 per cent in relative weekly wages.

Two conclusions emerge from the above discussion. First, search is found to be productive for all those jobseekers in our sample able to generate an acceptable wage offer within the first 15 weeks on their search. Second, for females, searching more than 15 weeks, on average, is found to lead to a lowering of search productivity. For males, in contrast, longer spells are as productive as shorter ones.

Why does productivity of search time differ for male and female jobseekers whose search spells last more than 15 weeks? The answer, we think, lies in the differing nature of the labour markets in which the two groups conduct their search.[10]

It appears that female workers conduct their job search in secondary markets, where a relatively limited number of good job opportunities exist. As we know, secondary markets are characterized by production processes involving simple, repetitive tasks that can be learned quickly and easily by many of the virtually infinite supply of untrained people. Entry in this segment of the labour market is easy, but the absence of internal job ladders prevents much upward mobility. Secondary markets may also be more localized. The wage offer distribution for individuals searching in the secondary markets may, therefore, be highly concentrated around the mean, that is, it may have a very small variance.[11] It may

Table 5-6

Empirical Estimates of the Wage Change among Jobseekers Spending an Additional Week on Search, by Sex and Reason for Separation from Their Previous Job, Canada, 1973-78

	Wage change			
	Search less than or equal to 15 weeks		Search more than 15 weeks	
	OLS†	TSLS‡	OLS†	TSLS‡
	(Per cent)			
Male				
Quit	.01	.22	-.04	1.9*
	(.30)	(1.03)	(1.59)	(2.48)
Laid off	.06***	.40**	-.07*	.42*
	(2.08)	(2.39)	(6.85)	(5.33)
All separations	.06**	.51**	-.07*	.64*
	(2.12)	(2.41)	(6.88)	(6.40)
Female				
Quit	.013	.18	-.08*	-.63*
	(.30)	(1.01)	(3.43)	(4.41)
Laid off	.08**	.42***	-.09*	-.67*
	(2.28)	(1.88)	(5.47)	(3.85)
All separations	.085**	.90*	-.08*	-.57*
	(2.29)	(2.51)	(4.93)	(3.11)

†Ordinary least squares.
‡Two-stage least squares.
*Significant at the 1 per cent level.
**Significant at the 5 per cent level.
***Significant at the 10 per cent level.
SOURCE Estimates by authors.

also be characteristic of secondary job markets that the few employers who offer better than average wages may be widely known. Given these circumstances, those female jobseekers who are able to exploit the few good opportunities are also able to terminate their search early. This may explain the positive coefficient for searches lasting fewer than 15 weeks. Beyond this, additional search yields negative results because of the small variance in the wage offer distribution. If the limited number of job opportunities are exploited early in the search period, as we argue, then waiting longer will generate a negative relationship between D and the relative wage change. On average, the unemployment insurance program replaces a relatively larger fraction of wages for females than for males – since males have higher wages than females – and this may explain why the duration of search is actually longer for females than for males. Empirical evidence on this issue is discussed in some detail in the following section.

For males, the productivity of search time is positive whether the search is longer or shorter than 15 weeks, but is more so for the longer spells. We suggest that male jobseekers are, perhaps, searching in the primary labour market. This market is characterized by higher wage levels, greater degrees of specific human capital, greater stability of job attachment, and the existence of internal job ladders. These circumstances provide considerable opportunities for jobseekers to improve upon their past wages. Early acceptance of a wage offer may in fact preclude a better opportunity that can only arise from a more extensive search.

While it is difficult to document conclusively that all the stylized characteristics of dual labour markets fit our sample for men and women, there is some evidence to suggest that the two groups participate in different types of labour markets.[12] The weekly wage rates for males in our sample were significantly higher than for females. The sample consists mainly of jobseekers in low-wage manufacturing industries where skilled and semi-skilled blue collar workers are traditionally paid more than lower-level white collar workers. The proportion of males in white collar occupations was smaller than that for females. The men were more unionized than the women. Their duration on their previous job was also higher. While there was little difference in completed education, the men had higher levels of training.

Before concluding the discussion on productivity of search time, a number of ancillary results emerging

from Tables 5-3 and 5-4 may be noted parenthetically. First, job tenure with the previous employer, *DUREMP*, is used instead of the conventional age-minus-education-minus-five as a measure of experience. We expected a positive sign on the coefficient of this variable. This variable can also be viewed as measuring stability in employment, that is, the ability to stay on one job for a period of time, which is relevant for prospective employers. As such, one would still expect it to have a positive effect. As it turns out, this variable has a significant negative impact in most of the cases studied. This suggests a very strong role for job-specific human capital.[13] Second, aggregate economic conditions have an important bearing on the productivity of search time. This is borne out by the coefficient of *URATE*, which is found to be negative in all cases and statistically significant in most of the cases examined. An increase in the unemployment rate by 1 per cent is associated with a 1 to 2 per cent decline in the relative wage gain. Third, the coefficient of on-the-job search, *LOOKBLLJ*, is positive in all wage change equations and is significant for males. This variable contributes about 3 per cent to the wage gain obtained by males who quit their previous jobs and about 1 per cent to that of males laid off, suggesting that premeditated quitting has relatively higher positive payoffs. Fourth, the significant and positive impact of the *OCCUP* variable means that jobseekers in white-collar occupations prior to unemployment obtained higher relative wage gains than blue-collar jobseekers, holding previous job tenure, education, and age constant. Finally, the significant negative effect of the *UNIONIZE* variable suggests that jobseekers whose previous jobs were unionized registered lower relative wage gains than nonunionized searchers. This may be due to the relatively higher wages enjoyed by unionized workers in our sample prior to their unemployment, who were therefore likely to experience lower relative wage gains after.

The Duration of Search

We now turn our focus to the determinants of the duration of job search. The estimates of the parameters of the duration of search equation for jobseekers who quit or were laid off are given in Table 5-7, using ordinary least squares (OLS). The mean values of the duration of search, *D*, suggest that those who lost their jobs experienced, on average, longer search-unemployment spells than those who left their jobs voluntarily. For the sake of brevity, we shall confine our discussion to a few variables only.

Consider first the cost of search variables. The coefficient of *UIB* has the most unambiguous message for each of the four categories examined. Being an unemployment insurance beneficiary increases a jobseeker's search from eight weeks to 11 weeks. The impact is larger for those who quit. The impact of unemployment insurance compensation on the duration of unemployment and on the unemployment rate generally has been investigated by a number of other researchers. Ehrenberg and Oaxaca (1976), and Felder (1977) each find a strong positive relationship between the rate of unemployment insurance benefits and the duration of unemployment. Although our findings are not inconsistent with such results, they are not comparable, since our specification does not refer to the rate of unemployment insurance benefits. Schmidt (1974), however, suggests that unemployment insurance beneficiaries search for two months longer than those who do not receive compensation – a figure not very different from our estimates.[14]

The opportunity cost of search time is measured by the previous wages log W_{t-1}. A lack of symmetry between the results for males and for females should be noted. As argued earlier, we expect a negative sign for this variable. For male jobseekers, the sign of log W_{t-1} is negative (and significant for those who were laid off) but, for females, it is positive (and significant for those who quit). A possible rationalization for this discrepancy may be as follows. We note above that extended search in the secondary labour markets yields negative returns. This is rationalized by postulating that good job opportunities in this sector are few and are exhausted early. The wage offer distribution existing in this sector is highly concentrated and exhibits smaller variance than one in the primary sector. In other words, a job offer can easily be generated for a market wage that is not very attractive. Under these circumstances, waiting for a more lucrative wage offer is unlikely to be very fruitful. If persons with higher previous wages also happen to search longer, the negative productivity of search, reported earlier, would follow. The coefficient of log W_{t-1} in Table 5-7 does suggest that females with higher previous wages search for longer periods of time.

Although the predicted response of a worker's search duration varies with the source of nonwage income (*SPOUSEY*, *SAVINGS*, and *OTHERY*), an observation worth mentioning is that females are more responsive than males to the spouse's income. This result is not surprising since male earners' incomes are generally larger and more stable. Contrariwise, the *SAVINGS* variable is significant for males but insignificant for females. The proxies for the discount rate, *PRIMEARN*, *DEPENDNT*, and *MARITAL*, are generally not significant.

Table 5-7

Empirical Estimates of the Duration of the Job Search for Jobseekers Who Quit or Were Laid Off Their Previous Job, by Sex, Canada, 1973-78

Variable	Male			Female		
	Quit	Laid off	All males	Quit	Laid off	All females
AGE	-.112	.004	-.042	-1.47	-.148	-.110
	(.25)	(.04)	(.39)	(1.38)	(.53)	(.41)
AGESQRE	.007	.001	.002	.022***	.002	.003
	(1.50)	(.78)	(1.51)	(1.82)	(.59)	(.82)
EDUC	1.28**	-.106	-.050	-.96	-.360	-.281
	(2.04)	(1.18)	(.54)	(.62)	(1.36)	(1.03)
AGEDUC	-.03	.001	-.00006	.021	.010	.007
	(1.54)	(.49)	(.03)	(.39)	(1.52)	(1.06)
TRAINING	-.937**	-.03	-.048	3.21***	-.097	-.067
	(2.09)	(.54)	(.76)	(1.73)	(.70)	(.46)
DUREMP	-.0009	.003*	.003*	.015***	.009*	.010*
	(.38)	(4.15)	(3.39)	(1.86)	(3.03)	(3.46)
log W_{t-1}	-3.54	-3.43***	-4.07*	27.54*	6.72	18.14*
	(.89)	(1.90)	(2.47)	(2.62)	(1.01)	(3.25)
OCCUP	-.291	-1.62**	-.909	-3.20	-2.10	-2.47
	(.20)	(2.10)	(1.35)	(1.07)	(1.12)	(1.55)
UNIONIZE	.503	-.278	-.194	5.15***	.325	1.88
	(.40)	(.53)	(.40)	(1.73)	(.18)	(1.22)
FLXINDUS	.560	-1.53***	-1.24	5.66	.259	1.52
	(.25)	(1.80)	(1.53)	(1.17)	(.10)	(.63)
FLXOCCUP	1.75	4.19*	3.79*	2.44	2.95	1.49
	(.79)	(5.07)	(4.79)	(.50)	(1.09)	(.62)
FLXWAGE	-.858	.126	-.049	-1.65	4.80*	2.24
	(.70)	(.26)	(.11)	(.59)	(2.87)	(1.54)
LOOKBLLJ	2.75**	.142	.797***	2.34	-1.46	-.138
	(2.28)	(.29)	(1.72)	(.83)	(.88)	(.10)
SPOUSEY	-.717	.591	.354	10.80*	5.15**	6.52*
	(.35)	(.84)	(.52)	(2.84)	(2.24)	(3.32)
OTHERY	.757	3.05*	2.39*	-2.65	2.53	.018
	(.34)	(2.82)	(2.46)	(.61)	(.90)	(.008)
SAVINGS	4.03*	2.19*	2.47*	1.99	2.42	2.13
	(2.97)	(4.26)	(5.03)	(.72)	(1.49)	(1.51)
UIB	10.97*	10.22*	10.98*	11.10*	8.18*	10.01*
	(8.62)	(13.21)	(17.03)	(3.98)	(3.95)	(6.10)
URATE	-1.17*	-1.24*	-1.21*	-4.21*	-3.89*	-4.34*
	(2.81)	(7.10)	(7.43)	(4.42)	(6.18)	(8.31)
LOCPRE1	22.26*	16.28*	16.71*	25.02	14.44	20.06***
	(4.75)	(10.21)	(10.90)	(.70)	(1.26)	(1.79)
LOCPRE2	12.93*	10.39*	10.70*	40.33*	25.54*	31.27*
	(3.00)	(7.86)	(8.30)	(4.25)	(5.88)	(7.77)
LOCPRE3	12.59*	7.17*	7.86*	16.11**	9.36*	11.47*
	(5.17)	(9.43)	(10.58)	(2.15)	(2.74)	(3.59)
LOCPRE4	5.13***	4.18*	3.84*	4.99	-2.33	-.336
	(1.84)	(4.18)	(4.05)	(.64)	(.65)	(.10)
LOCPRE5	-7.61***	-8.49*	-8.82*	-20.38***	-22.00*	-23.63*
	(1.87)	(4.95)	(5.58)	(1.67)	(3.67)	(4.28)
FLXMOVE	.652	.716	.655	4.27	-.341	.764
	(.55)	(1.49)	(1.45)	(1.41)	(.18)	(.47)
PRIMEARN	-.336	-.112	-.179	.525	2.16	1.96
	(.23)	(.18)	(.31)	(.17)	(1.15)	(1.22)
DEPENDNT	-.324	.179	.146	.425	.180	.206
	(.53)	(1.23)	(1.00)	(.42)	(.71)	(.80)
MARITAL	-.635	-3.95*	-3.46*	.810	.174	.613
	(.40)	(6.31)	(5.86)	(.20)	(.07)	(.30)
QL	..	..	-1.88*	..	..	.374
	..	..	(3.33)	..	..	(.27)
CONSTANT	.631	17.24*	15.75*	53.10**	42.73*	40.12*
	(.06)	(6.52)	(6.28)	(2.24)	(5.16)	(5.32)

Table 5-7 (concl'd.)

Variable	Male			Female		
	Quit	Laid off	All males	Quit	Laid off	All females
R^2	.11	.07	.08	.17	.09	.11
F-statistics	8.71	22.25	29.76	6.24	5.70	10.81
Number of observations	1,931	7,619	9,550	860	1,610	2,470
Mean *D* (weeks)	20.71	23.65	23.06	30.90	31.48	31.28

*Significant at the 1 per cent level.
**Significant at the 5 per cent level.
***Significant at the 10 per cent level.
SOURCE Estimates by authors.

The impact of aggregate economic conditions is captured by introducing provincial unemployment rates. In addition, a set of dummy variables representing each of the provinces is also included in the data. These variables are, by and large, statistically significant, suggesting the important influence of labour market conditions. The unemployment rate by itself is highly significant for each of the cases studied. The negative sign for *URATE* suggests a decrease in search time associated with higher rates of unemployment. This stands in contrast to the theoretical expectation of a positive coefficient on the unemployment rate. It is assumed that long-term unemployment becomes proportionately greater in a recession. However, as Kiefer and Neumann (1979) suggest, if cyclical conditions, proxied by the unemployment rate, are anticipated, then there need not be any association, positive or negative, between the duration of search and the unemployment rate. In this light, the negative coefficient for the unemployment rate in Table 5-7 may be interpreted as follows. Statistics on *URATE* in our sample refer to the rate at the beginning of a search spell. It is possible that wage offer expectations may be geared to this rate as search begins, such that the higher the *URATE*, the lower the expected value of the mean of the wage offers. Note also that the higher the unemployment rate at the start of the spell, the more likely a subsequent improvement in the economic climate. If the unemployment picture improves as search proceeds, the jobseeker would be pleasantly surprised if actual wage offers exceeded the expected distribution. A lower duration of search may in this way be related to high levels of the initial *URATE*.[15]

Summary

Theoretical models of job search view unemployment as productive search activity. Central to the search paradigm is the notion that search is an investment of time and resources in order to secure an acceptable offer. Unemployed searchers acquire labour market information that helps them to maximize their lifetime income (utility). This chapter examines the issue of productivity of search time as measured by changes in the postunemployment wage relative to the wage rate received prior to the spell of unemployment. Several important findings emerge from our analysis.

First, the fact that a significant proportion of jobseekers manage to secure real wage gains after a job search provides broad support for the search paradigm. Individuals who quit obtain a larger gain than individuals who are forced to search involuntarily.

Second, and perhaps a more significant finding, the productivity of the search process is segmented over time. Search is productive for all those jobseekers who are able to terminate their unemployment within the first 15 weeks of the search. Searching for more than 15 weeks leads, on average, to a definite lowering of search productivity for females, with a change in postunemployment weekly wages just over 0.5 per cent a week or about 2 per cent a month (in 1971 dollars) relative to previous wages. For males, in contrast, the productivity of search time increases with the duration of search, even for long spells of unemployment, with a relative wage gain of between 0.5 and 2 per cent a week. These results mean that increasing the time spent in search reduces the productivity of search for females while the impact is precisely the opposite for males. It appears that the male and female jobseekers in our sample were participating in different markets and that the productivity of their search time was significantly affected by the nature of these labour markets. Although these results are not conclusive, our findings suggest that models of job search behaviour operate within the constraints imposed by segmented markets.

Third, the productivity of search is a function of the relative looseness or tightness of the labour market. Specifically, an increase in the unemployment rate by 1 per cent leads to a reduction of 1 to 2 per cent in the postunemployment weekly wages relative to the

wages for the previous job. This may happen because employers lower their wage offers, thus shifting the distribution of wage offers downward, or because jobseekers lower their wage expectations and accept a lower-paying job, or perhaps both.

Fourth, additional support for the search paradigm comes from the fact that a part of the duration of search can be explained by the cost and expected returns from search. In particular, our study shows that the duration of search for unemployment insurance beneficiaries is about two to three months longer than that for other jobseekers. This estimate is in line with estimates from other sources, and it suggests some role for unemployment insurance in determining the aggregate level of unemployment. Whether increases in unemployment insurance benefits would induce additional productive job search or induce leisure cannot be ascertained from these data, however; certainly, this is a subject for further study in the Canadian context.

These results should not be automatically generalized for the Canadian labour market as a whole. It should be remembered that our data are drawn from the Labour Force Tracking Survey, conducted in 1978 by the Department of Industry, Trade and Commerce, which focused on communities where massive layoffs had occurred and, therefore, our results do not necessarily represent the behaviour of the entire labour force. Also, to the extent that nonpecuniary returns to search activity, such as better job/worker matching, are important, the change in relative wages is an incomplete indicator of the success of a search. A more comprehensive approach should attempt to take such considerations into account, since they affect search productivity in a broader sense.

6 Conclusions

In evaluating the results presented in the preceding chapters, we confine ourselves, first, to the narrower context of the search paradigm. However, we believe that these results can also be viewed in the broader context of labour market dynamics unfettered by a single, all-inclusive theoretical framework. We consider this view as well. Finally, a number of policy suggestions flow from the two perspectives just mentioned. In pointing out these policy suggestions, we wish to caution the reader, again, about the limitations of the data, as pointed out in the main body of the study. We also wish to point out that the R^2s in the empirical work are small and do not constitute a very large explanation of the variance. One should therefore be cautious in drawing strong conclusions and making predictions from our analyses.

The Search Paradigm Perspective

That search paradigm makes a valuable contribution to the understanding of why some unemployment is voluntary, and why some unemployment is socially efficient is granted even by critics of search theory.[1] Debate arises when the natural rate (or NAIRU) concept is equated with search or, as a consequence, with the voluntary and the efficient rate of unemployment. Although principally not designed to contribute to this debate, our results do shed some light on it. We suggest that the question of the application of the paradigm in practice should be separated from the issue of the magnitude of its possible impact. For simplicity, we refer to these as the "validity" and "significance" issues, respectively.

The Validity Issue

Broad support for the search paradigm is found in the results of this study. Some of the main results leading to this conclusion are here touched upon briefly.

Central to the search paradigm is the notion of reservation wages. Our study suggests that jobseekers do behave as if they are operating with this notion; they seem to be balancing the costs of search against the expected returns from this activity. We find this result for males as well as for females and for those who quit as well as for those who were laid off. The asking wage is not set arbitrarily, but responds to changes in the economic environment in such a way that expectations of higher wages cause it to increase, while increases in the costs of search cause it to decline.

The stickiness of wages is a central issue in economics. This study suggests that unemployed individuals do exhibit some downward flexibility in their wage demands as the duration of search lengthens. This decline in reservation wages is observed for males as well as for females and for those who quit as well as for those who were laid off. The rate of decline for the sample as a whole is, however, quite low, only 0.20 per cent per month (in real terms).

The flexibility in wage demands exhibited by high-wage workers is greater than that observed for low-wage workers. In other words, the speed of adjustment is positively related to the costs of search. The sluggishness of wage flexibility at the lower end of the wage spectrum is understandable in view of the relatively greater role of income security schemes for employees at these levels.

The duration of search itself is determined by the same factors, namely, the search costs and expected returns. Thus, a part of the duration of unemployment depends upon employment-acceptance frictions. In particular, our study shows that a jobseeker who receives unemployment insurance benefits is able to continue his search for an additional period of about 8 to 11 weeks, or between two and three months longer. This estimate is consistent with estimates from other sources, and suggests some role for unemployment insurance in determining the aggregate level of unemployment.

Support for the search paradigm also comes from the fact that a large proportion of jobseekers do manage to make a wage gain (in real terms) as a result of search unemployment. Individuals who quit

make a larger gain than individuals who are forced into search involuntarily. An extra week of search itself adds to improvements in postunemployment wages relative to preunemployment wages for all males and for those females with a duration of unemployment of 15 weeks or less. For females searching for longer durations, on the other hand, each additional week of search diminishes wage gains or increases wage loss.

The fact that jobseekers who quit gain more from search than those who were laid off, and that males gain more than females, provides additional indirect support for the search paradigm. In the former case, the importance of voluntary unemployment is demonstrated. In the latter case, the importance of wage dispersion is highlighted. One of the basic theorems of search theory states that gains from search are greater, the wider the wage distribution confronting a jobseeker. The reason why search is less productive for females lies in the fact that the distribution of wage offers for females is highly concentrated with very small variance.

Additional support for the search paradigm may be derived from the fact that our regression samples contain a large proportion of individuals who would normally be classified as long-term unemployed. Despite the inclusion of these cases, the marginal calculus implied by search theory appears to be operating. In fact, as noted above, the productivity of search time for males searching longer than 15 weeks is also positive and statistically significant. This finding attains greater significance in view of the fact that the average duration of unemployment for the total labour force is approximately 15 weeks.

A finding of some significance is that individuals who combine on-the-job search with subsequent search while unemployed benefit more than individuals who begin searching only after they have become unemployed. Thus, full-time (unemployed) search alone need not be the most profitable strategy to follow, as some search theorists have insisted.

The Significance Issue

Turning now to the significance issue, we note the pervasiveness of search activity. The concept of search rate introduced in Chapter 2 suggests that one in 10 Canadian labour force participants is a jobseeker. Irrespective of the socio-economic characteristic examined, we find a significant degree of associated search activity. Among employed individuals, about 3 per cent report themselves to be jobseekers. This employed search rate is not noticeably lower in Newfoundland, where the unemployment rate is excessively high. Understandably, the search rate is high for employees in part-time work and for those in younger age groups.

Among the unemployed, about 30 per cent have initiated their spells of unemployment voluntarily, which is significantly larger than the proportion of such jobseekers in the United States. Only part of this share may be explained by differences in definitions employed in the two countries, and it is safe to assume that the difference is significant. A major reason why voluntarily initiated unemployed job search is so high in Canada may lie in the availability of a generous unemployment insurance program. However, a definitive link between the availability of unemployment insurance benefits and voluntary initiation of unemployment cannot be established from the data at hand.

Temporary layoff is another component of unemployment. Individuals expecting to be recalled by their former employers need not engage in active search. Yet one in every five does report searching for alternative jobs.

From the foregoing, a rough indication of the extensiveness of search activity can be gauged. However, data available to us are not sufficient to identify the precise contribution that search activity makes to the unemployment rate, but it is possible to derive some crude estimates. As detailed in Appendix C, we find that, during 1977, search-related activity could account for some 4 per cent of the labour force, or about half of the measured unemployment rate of 8.2 per cent in that year.[2]

Crude as this estimate is, it points up two important conclusions. First, search activity does account for a significant proportion of unemployment. Second, the search rate among unemployed persons does not explain all the measured unemployment or the estimates of the natural (or NAIRU) rate of unemployment.[3] The basic message then is that the equilibrating mechanism of the labour market does work and does require a certain degree of unemployment. However, the measured rate of unemployment far exceeds this margin, and the information imperfections of the labour market do not provide a complete explanation of all unemployment. Hence, we would regard as untenable the Panglossian conclusion, which some theorists draw, that all is well with the labour market and that governments should not attempt to nudge it in desirable directions.

The Labour Market Perspective

The foregoing suggests a qualified support for the search paradigm. But search behaviour may also be examined from a labour market perspective that is broader than the search paradigm itself. From this

perspective, the evidence presented in the preceding chapters points to the scattered but persistent imprint of a segmented market on the processes and outcomes of search activity. Consider the following facts.

A significant proportion of individuals who quit their jobs do not begin to search for a job immediately. Instead, they make a transition out of the labour force as an interim step, and enter the labour force to begin a period of job search while unemployed. Women experience this kind of labour force transition more often than men, since they often have more pronounced nonmarket reasons for jobleaving. However, this behaviour is also consistent with the well-known fact that market opportunities for women are not as favourable as those for men. The fact that individuals discouraged from job prospects turn up later as unemployed jobseekers and push the rate of unemployment up invests these labour force transitions with some importance. To the extent that these transitions are market related, they cannot be lightly treated. Evidence from this study does point to limited market opportunities for women. Job search under these conditions brings limited gains, if any, and costs a great deal for the public treasury, at the same time raising the rate of unemployment.

The methods of search used by women and younger persons differ from those used by prime-age male groups. The former groups rely more on informal and more time-consuming methods. This result is in line with empirical evidence obtained in studies done in the United States.[4] The search strategies employed also differ; men search in a manner consistent with the systematic model of search, whereas women appear to pursue a *random search* strategy.[5] The reason for this, we think, lies in the fact that relatively larger proportions of men are in the primary labour market, whereas women are concentrated in the secondary market. The primary labour market is generally characterized by higher wage levels, greater degrees of specific human capital, greater stability of job attachment and, most important, the existence of internal job ladders. In the secondary market, on the other hand, production processes tend to involve simple repetitive tasks that can often be learned quickly and easily by many of the virtually infinite supply of untrained people. Anyone may enter this segment of the labour market, but the absence of internal job ladders prevents much upward mobility. Job turnover is consequently high. Young people and women are frequently identified as the major participants in the secondary markets, whereas males dominate the primary sector.

A number of indicators support the view that, relative to females, a greater proportion of the males examined in this study were in primary labour market job clusters. In our sample, the real weekly wage rates for males were significantly higher than those for females. The sample consisted mainly of low-wage manufacturing industries, where skilled and semi-skilled blue collar trades are traditionally paid more than lower-level white collar jobs. The proportion of males in white collar occupations was smaller than the proportion of females. The men were more unionized than the women. Their tenure on their previous job was also higher, and the men had higher levels of training.

If segmented labour markets do exist, their impact should be felt on the productivity of search time, as measured in our sample. From the discussion in Chapter 5, we conclude that this indeed was the case. For females, job search extending for more than 15 weeks led, on average, to a definite lowering of search productivity, which was reflected in a reduction in postunemployment weekly wages of about 0.5 per cent a week or about 2 per cent a month (in 1971 prices) after this time. For males, in contrast, the productivity of search time was positive; the value of an additional week of search was in the range of 0.5 to 2 per cent in relative weekly wages both before and after 15 weeks of search.

Policy Implications

The foregoing discussion leaves us with three major considerations relevant for policy purposes. First, left to themselves, the labour market adjustment processes do appear to work, but the wage signals work very sluggishly, so this adjustment process does not explain all of the observed unemployment. Second, the existence of dual (or segmented) markets makes the task of adjustment more difficult. Finally, these two factors, when combined with unemployment insurance and other income maintenance schemes, induce individuals to search longer than market wage dispersions warrant. This extra search, while it may make economic sense for the individual, does not appear to contribute to the productivity of search time for some groups of jobseekers.

In light of the above, policymakers face a serious dilemma; assisting the equilibrating mechanism of the market seems to justify policies for providing and disseminating labour market information, including the use of subsidies for the search process. The existence of dual (segmented) markets, on the other hand, acts as a bottleneck for the equilibrating mechanism, and consequently generates a rate of unemployment that is suboptimal. The job search paradigm suggests a supply-side response. The dual labour market approach regards such initiatives as

misguided, and suggests a demand-oriented approach.

The major policy conclusion, therefore, is that a two-pronged approach is required. Concentrating on either the supply or demand approach, although often advocated, would be wasteful. A second general conclusion is that barriers between markets need to be lowered, if not altogether eliminated, and this requires a careful analysis of the institutional or legal framework that contributes to such barriers.

Turning now to more specific policies, efforts could be made to increase the efficiency of the search process. The public employment service (PES), for instance, does not appear to be particularly effective in matching people with jobs. Its utilization rate by jobseekers far exceeds its success rating. A major problem relates to the poor image of the PES among employers, which results in low penetration of the job market.

The prevalence of voluntary jobleaving needs to be brought to public attention. One way of doing this would be to publish a separate unemployment index showing the rate of voluntary jobleaving, as is done in the United States. However, unlike the practice in the United States, the re-entrants themselves should be categorized by reason for job separation and included in measurements of the voluntary jobleaving rate of unemployment. This exercise could be undertaken by Statistics Canada.

Attempts should be made to reduce voluntary jobleaving, which is wasteful for the public purse. Persons wanting to quit their jobs could be required to contact the PES prior to quitting. Receipt of unemployment insurance benefits could be made to depend upon this prior consultation. It would then be possible, with this requirement, to inform persons planning to quit of the extant market opportunities, so that chances for wasteful jobseeking could be reduced. Simultaneously, in the event that quitting did occur, the PES would automatically be made aware of the vacancy thus generated.

Finally, complaints from researchers about the lack of data are perennial. Our lamentations in this regard are more than merely ritualistic. How much search (hours per week) does an individual actually undertake? What is the effectiveness of the methods of search used? And what are the direct costs of search? These are some of the basic data that are not available for the Canadian job market. This study has been limited to the employee side of the job market primarily because of the absence of data on the employer side.[6] These data need to be developed for informed decisionmaking.

Appendixes

A Definitions

Jobleavers – Job separation occurs primarily as the result of a decision undertaken by an employee. The reasons given for leaving the last job, as recorded on the Labour Force Survey questionnaire, are: own illness or disability, personal or family responsibilities, going to school, quit job for no specific reason, changed residence, dissatisfied with job, retired, or other reason not elsewhere specified. The precise definition of jobleavers includes all individuals who leave their jobs for one of the reasons specified above *and* who a/ begin looking for work immediately following or possibly before the termination of their last job *and* who are still looking for work at some time in the four-week reference period ending with the reference week, or b/ are not looking for work because they are to begin a new job within four weeks of the end of the reference week.

Joblosers – Joblosers are unemployed individuals who separated from their last job because the job itself ceased to exist, either permanently or temporarily. This definition includes all persons who lose their job or are laid off from their job *and* who a/ begin looking for work immediately following (or possibly before) the loss of their job *and* who are still looking for work at some time in the four-week period ending with the survey's reference week, or b/ are not looking for work in the expectation that they will be recalled to their former jobs, or c/ are not looking for work because they are to begin a new job within four weeks of the end of the reference week.

Entrants to the Labour Force – New entrants are unemployed persons who have never worked.

Re-entrants to the Labour Force – These are unemployed persons, who, following separation from their last job, were, for some period, out of the labour force.

B Estimates of Aggregate Search Costs

In Chapter 2, we document the extensiveness of job search in Canadian labour markets. A natural question is, what magnitude of resources is devoted to this process each year? Below, we present some illustrative estimates of these search costs, which should be considered as suggestive in the sense of expressing some general orders of magnitude. Our focus is on the aggregate search costs rather than on individual search costs, although conceptually the former can be arrived at by aggregating individual costs.

Search costs may be defined as consisting of two components: direct and indirect costs. Included in the indirect costs are the opportunity cost of time and nonpecuniary costs such as the psychic costs of undertaking a search. Although the minimum acceptable wage set by an unemployed worker defines his private opportunity cost in activities other than work, his social opportunity cost is lessened by the amount of unemployment compensation, since his acceptance of a job confers on society an external benefit in the form of lower taxes to finance it. Direct costs are pecuniary costs, such as the costs of filing and mailing an application, transportation costs, and so on.

It is clear from these definitions that the indirect costs of job search are by far the more important of the two items and therefore the more important factor in determining search activity. (Data on direct search costs are nonexistent and, in any case, are only a small proportion of total search costs.) The indirect costs depend on the acceptance wage rate, below which an individual will not accept a wage offer. In this context, the cost of search can be given as:

$$(B.1) \qquad C = (1 - h)\, W_0$$

where

C = the weekly cost of search,

h = a fraction of wages representing taxes and employment-related expenses, and

W_0 = the wages on the previous job.

For an unemployed individual, i, the wage rate on the previous job, W_0, is assumed to be equal to the minimum acceptance wage rate.

The total cost of search, TC, over the duration of unemployment, DU, in weeks will be given as:

$$(B.2) \qquad TC = (1 - h)\, W_0 * DU$$

But this estimate may not be the foregone value of time actually spent searching because of the likelihood that only a fraction of the total time of an unemployed person is in fact devoted to search activity. Although, by definition, all unemployed individuals are required to search full-time, various studies arrive at different estimates of search time.[1] Thus, if SD is the estimate of search time in weeks, then equation B.2 can be rewritten as:

$$(B.3) \qquad TC = (1 - h)\, W_0 * SD$$

The average previous weekly wage rate, W_0 of the unemployed in 1977 is adjusted for h = \$175 per week.[2] In 1977, the average duration of unemployment was 14.5 weeks. In the absence of any estimates regarding the amount of time devoted to search activity in Canada, we assume that the average unemployed individual spends only about 15 hours per week or about 40 per cent of his time during a normal work week in search activity. So in terms of weeks, the average SD for an unemployed individual in 1977 was 5.8 weeks.

These estimates now can be combined to get an approximate value of the total search cost, TC, for an unemployed individual, according to equation B.3. Hence, the estimate of TC is \$1,015. When these estimates are weighted by the total number of

unemployed searchers in 1977, the total resources devoted to search activity in 1977 amounted to $800 million. This figure does not include the estimate of search costs for employed individuals. In the absence of the relevant data, we may speculate that adding the costs of employed persons for search would in all probability make job search in Canada a billion-dollar industry.

C Estimates of Search Rates

There are several ways of measuring how much search activity contributes to the unemployment rate. We may distinguish between three different concepts of search activity. First, there is the amount that would be reported if only individuals who search voluntarily are taken into account. Second, there is the concept based on the amount of time actually spent in search. Finally, not all job search is productive in the sense that it results in a job. A rate of unemployment could be constructed on the basis of productive search only. Each of these concepts is treated below. The estimates presented must be regarded as crude and highly tentative. They are presented here as illustrative of the magnitude involved.

Voluntary Search Rates

Voluntary unemployment is an extremely slippery concept. In the spirit of search theory, an individual is voluntarily unemployed when he or she is searching for a better job offer, not just any job offer. This concept is difficult, if not impossible, to measure. What is presented below does not pretend to come to grips with this issue. Rather, we simply take the spells of unemployment that are voluntarily initiated as a measure of voluntary unemployment. Clearly, this approach has serious shortcomings. A person who initiates a spell of unemployment voluntarily may no longer be voluntarily unemployed if jobs prove not to be available. By the same token, though, individuals who are forced into unemployment involuntarily may extend its duration voluntarily. We assume for present purposes that these two forces more or less offset each other.

As Table 2-8 in Chapter 2 indicates, the number of voluntary jobleavers averaged 247,000 in 1977. Expressed as a proportion of the labour force, this amounts to 2.4 per cent. Thus, of the 8.2 per cent rate of unemployment in 1977, some 2.4 percentage points, or close to 30 per cent, is accounted for by spells of unemployment that were initiated voluntarily.

These 247,000 individuals were not the only persons who searched for a job voluntarily. As shown in Table 2-2 in Chapter 2, some 270,000 employed individuals also reported seeking a job. These individuals obviously fulfilled the condition that they were searching for better job. Adding these two together puts the total number of voluntary searchers at 517,000. If all these individuals alone are considered to have been engaged in the search for better job offers, what then is the voluntary search rate? This rate can be obtained by dividing 517,000 by the figure for the 1977 labour force at 10,498,000, which comes to 4.9 per cent. Since this figure contains both employed and unemployed individuals, it should not be directly related to the usual concept of the unemployment rate. It does, however, suggest an upper limit to the component of frictional time spent in searching for a better job.

Rates based on Estimates of Actual Search Time

These 517,000 individuals did not search full-time, that is, 40 or so hours a week. Studies done in the United States suggest that actual search time for the unemployed ranges from 8 to 18 hours a week.[1] No such estimate is available for the employed, but a proxy measure may be construed in the following manner. Data presented in Chapter 2 show that the number of search methods used by employed individuals averages 1.6, compared with a figure of 2.1 for unemployed persons. These figures can serve as a rough weighting measure (namely, 1.6/2.1) for evaluating hours of search activity per week for the employed, and suggest a range of 6.1 to 13.7 hours of search per week for the group. Putting employed and unemployed (voluntary) jobseekers together gives a range of estimates of 0.9 to 1.9 per cent of the labour force as the actual rate of search activity for individuals who engaged in search voluntarily.[2]

There is, however, much more job search activity in the economy than is indicated by the 517,000 figure. Individuals who lose their jobs also conduct job search, as do individuals who freshly enter the labour force. Adding these together gives the total number of jobseekers at 1,047,000. They engage in activity

that, expressed as a proportion of labour force, amounts to between 1.9 and 4.2 per cent of the labour force.[3] This range, again, cannot be related directly to the unemployment rate, because it contains employed individuals. If employed individuals are not considered, then the estimated range becomes 1.5 to 3.3 per cent of the labour force.

Unemployment Rate of Productive Search

So far, we have not considered whether job search actually terminates in a job. As reported elsewhere,[4] a large proportion of all unemployment spells (about 44 per cent in 1980) terminate not in employment, but in exit from the labour force. Put another way, only 56 per cent of unemployment spells can be regarded as productive search spells. Since the duration of unemployment for the "withdrawal" spells is somewhat longer than that for the spells that terminate in jobs, it would be safe to conclude that about half of the measured unemployment rate may be attributable to productive job search.

Conclusions

The foregoing has generated three sets of estimates. First is the figure of 4.9 per cent of the labour force representing individuals who initiate search voluntarily. If these individuals alone were employed in the pursuit of better jobs, this figure would represent the unemployment rate as defined in search theory. However, this figure contains both employed and unemployed individuals, and therefore is not comparable to the measured unemployment rate. Because of the difficulties involved in the concept of voluntary unemployment, we do not wish to emphasize this particular result.

The second figure measures the actual hours required for job search. It yields estimates ranging from 1.9 to 4.2 per cent. This range is an estimate of how much search-related unemployment rate could result, if actual search hours done were considered. Since these estimates, again, contain search activity of the employed, they are not all a component of the measured unemployment rate. The third estimate is directly comparable to the unemployment rate, since it does not consider time devoted to employed search. This estimate suggests that approximately half of the measured unemployment rate can be described as arising from productive search.

Given the crudeness of these measures, we feel that about 4 per cent of the labour force, or half of the measured unemployment rate, can be said to arise from activities related to job search.

Notes

CHAPTER 2

1 For details on the Labour Force Survey, see Statistics Canada, *The Labour Force*, Statistics Canada cat. no. 71-001, monthly.

2 For further details, see Hasan and Gera (1980).

3 Vanderkamp (1975).

4 Much has been written on the information revolution about to transform postindustrial societies. It is also widely known that the communications industry is experiencing declining average costs. See Bell (1979) and Zeman (1979).

5 Gower (1975) reports a higher incidence (36 per cent) of on-the-job search. However, his data are based on the criterion of incidence of search within the last six months, which is different from the LFS definition.

6 See Rosenfeld (1977).

7 See Statistics Canada, *The Labour Force*, Statistics Canada cat. no. 71-001, for a definition of the term unemployed.

8 For definition, see McDonald (1978).

9 See Hasan and Gera (1980).

10 We define temporary layoffs as individuals who were laid off, but who expect to be recalled by their former employers within six months.

11 Clark and Summers (1979).

12 See U.S., Department of Labor, Bureau of Labor Statistics, *Jobseeking Methods Used by American Workers* (Washington, D.C.: G.P.O., 1975).

13 The LFS data count the duration of unemployment up to the survey date. These data suffer from two types of biases known as the "interruption" bias and the "length" bias. The latter usually dominates, so that the average duration based on in-progress spells is longer than that for completed spells. For an analysis of the relationship between incomplete and complete spells of unemployment, see Salant (1977). For an application to Canadian data, see Hasan and de Broucker (1982).

14 See Rees and Schultz (1970).

15 It is also possible that the employers of teen-agers – many of whom are part-time or part-year workers – often prefer to hire directly rather than through PES referrals.

16 According to estimates by Gordon (1973), in the United States, unemployed searchers spend an average of only about 8.4 hours per week in search activity. Felder (1975) estimates that an average of about 17 hours per week are spent by unemployed individuals in search. In the absence of any evidence in this regard for Canada, we assume that unemployed individuals spend about 15 hours per week in search activity.

17 See U.S., Department of Labor, Bureau of Labor Statistics, *Employment and Earnings* (Washington, D.C.: G.P.O., monthly).

CHAPTER 3

1 The reason why wage dispersion does not disappear in the face of persistent search is as yet an unresolved issue. See Rothschild (1973) for a discussion of this issue.

2 See Phelps (1970).

3 See Stigler (1962) and Alchian (1970).

4 For a precise demonstration, see Lippman and McCall (1976).

CHAPTER 4

1 Feldstein (1973*a*)

2 Malhotra (1976).

3 Feldstein (1973*b*).

4 Doeringer and Piore (1971).

5 The *RW* is unobservable, as it results from an interaction between the individual's search process and the economic environment. Moreover, if the *RW* is set in each period such that the expected gain from an additional search just equals the marginal cost of that search, then the *RW* is time-dependent, and the point of truncation varies over time. See, for example, Kiefer and Neumann (1979).

6 Stephenson (1976).

7 See, for example, Hall (1973), Kahn (1978), and Kiefer and Neumann (1979).

8 It should be noted that the *URATE* variable for the quit sample has a perverse sign.

9 Barnes (1975) provides three estimates for the first, second, and third months. The figure quoted here refers the second month.

10 Feldstein (1973*b*).

11 For a detailed exposition of this point, see Hasan and Gera (1982).

12 Cartter (1959).

CHAPTER 5

1 See, for example, Ehrenberg and Oaxaca (1976), Classen (1977), Siedule, Skoulas, and Newton (1976), Grubel, Maki, and Sax (1975), and Green and Cousineau (1976).

2 Admittedly this is a somewhat restricted definition, as nonwage elements of a job (including the long-run impact of job search) are not covered.

3 See, for example, Welch (1977).

4 See, for example, Kahn (1978).

5 See, for example, Cooke (1977).

6 A Chow test on the independence of the samples of those who quit or were laid off resulted in a statistically significant F of 1.41 for males and 1.83 for females, indicating that the underlying productivity of the search process is not the same for quits and layoffs. Consequently, it is appropriate to estimate separate equations for quits and layoffs. The reader may notice that, in the regression for all males (and all females), we introduce a dummy variable, QL (if quit = 1, 0 otherwise), as well as an interaction variable, $D \times QL$.

7 See, for example, Clark and Summers (1979).

8 This duration of search-unemployment can be considered frictional in nature. Rees (1957), for example, uses a ten-week cutoff as a "possible device for distinguishing frictional unemployment from other types." However, many governmental publications often make an important distinction between unemployment of 15 or fewer weeks in duration and that with a greater duration. See Fleisher (1970), p. 263.

9 The complete results are available upon request. See, for example, Gera and Hasan (1981).

10 Much has been written on segmented labour markets in recent years. Although there is continuing debate on the merits of theories of labour market segmentation, there is wide agreement on the stylized elements that distinguish the primary sector from the secondary. See, for example, Doeringer and Piore (1971), Loveridge and Mok (1978), and Wachter (1974).

11 In our sample, female workers have much smaller variance in the wage distribution, compared with male workers.

12 Segmented labour markets are also characterized by the presence of wage discrimination. Following the methodology used by Gunderson (1979), our estimates indicate that nearly 63 per cent of the wage differentials between males and females in our example can be attributed to wage discrimination against females. These estimates are quite close to those found by Gunderson (1979), and Robb (1978) in the Canadian context.

13 See, for example, Kiefer and Neumann (1979).

14 Other studies of unemployment insurance, for instance, Mortensen (1977) and Canadian studies such as Grubel, Maki, and Sax (1975), Green and Cousineau (1976), and Siedule, Skoulas and Newton (1976), also provide evidence of the impact of unemployment insurance. However, while they each suggest a positive impact, their results are in terms of the impact on the rate of unemployment and not on the duration of search-unemployment per se.

15 The fact that a higher rate of unemployment is associated with a shorter search duration certainly supports a theory of (some) unemployment as a conscious choice. This point was suggested to us by an anonymous referee.

CHAPTER 6

1 See, for example, Tobin (1972), and Clark and Summers (1979).

2 See Appendix C for the methodology used.

3 Estimates for the natural rate of unemployment (NAIRU) for Canada for the period 1977-78 fall between 6.5 and 7 per cent. See, for example, Fortin and Newton (1980).

4 See Bradshaw (1973).

5 Gera and Hasan (1982).

6 A survey of employer search behaviour has apparently been undertaken recently by the Department of Employment and Immigration, but this data base is not available for public use.

APPENDIX B

1 See Chapter 2, note 16.

2 The average weekly wages and salaries of those employed during 1977 were $249.95, as reported in Statistics Canada, *Canadian Statistical Review*, Statistics Canada cat. no. 11-003E, January 1979, p. 55. Assuming that the average earnings of those who became unemployed are equal to the average for all employed individuals, the estimate of W_0 adjusted for h is then only 70 per cent of the average weekly wages and salaries. Although we do not have a direct estimate of h, it is assumed that the value of h is about 30 per cent of W_0. The value of this estimate is based on calculations for the United States by Gordon (1973).

APPENDIX C

1 See Gordon (1973) and Felder (1975).

2 The lower end of the range is obtained as follows:

$$\text{(C.1)} \quad \left\{270{,}000\left(\frac{8}{40}\right)\left(\frac{1.6}{2.1}\right)\right\} + 247{,}000\left(\frac{8}{40}\right) = 90{,}500$$

This figure of 91,000 when divided by 10,498,000 (the labour force in 1977) yields a rate of 0.9 per cent. The fraction 8/40 represents hours of search per week. The fraction 1.6/2.1 represents the weight for

employed search time. The number 270,000 represents employed searchers, while there are 247,000 unemployed searchers who initiated their search voluntarily. The figure for the upper end of the range is obtained by substituting 18/40 in place of 8/40.

3 These figures are obtained by plugging in 777,000 unemployed jobseekers in place of the 247,000 shown in equation C.1, while the upper end of the range is provided by substituting 18/40.

4 See Hasan and de Broucker (1982).

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